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REPORT OF INITIAL STUDY OF ALTERNATIVES
OLD MILL POND DAM
STATE ID NO. 105.03
HAMPTON, NEW HAMPSHIRE
SA Project No. 111-12-002
October 11, 2013

Prepared for:

TOWN OF HAMPTON
Department of Public Works
11 Hardardt's Way
Hampton, NH

Prepared by:

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October 14, 2013 SA Project File 111-12-002

Department of Public Works
Town of Hampton
11 Hardardt's Way
Hampton, NH
Attention: Mr. Chris Jacobs, PE

Re: Report of Initial Study of Alternatives
Old Mill Pond Dam, State ID No. 105.03
Hampton, New Hampshire

Ladies and gentlemen:

Stephens Associates Consulting Engineers, LLC (SA, we, our, or us) has prepared this letter Report presenting results of our Initial Study of Alternatives to repair (reconstruct) or decommission Old Mill Pond Dam (Dam, Project or Site) in Hampton, NH. SA performed these services for the Town of Hampton Department of Public Works (Town, Owner, Client, you, your, etc.) in accordance with our Contract for Engineering for Old Mill Pond Dam Initial Study of Alternatives (Agreement) dated May 17, 2013.

This Report summarizes conceptual alternatives to repair or decommission the Dam, preliminary cost estimates for the alternatives, results of our file review, dam inspection, hydrologic and hydraulic (H&H) evaluation, and evaluation of some factors that influence the Project, including historic resources, sediment, fisheries and wildlife, infrastructure, land ownership, and potential for outside funding.

Descriptions in this Report predominantly use conventional dam engineering terminology with regard to dam features (structures, appurtenances and relative locations). As such, when we speak of the left or right, we refer to the relative locations of the feature looking downstream.

Summary

The purpose of SA's services was to evaluate factors and costs associated with the options of repair (aka reconstruction) and decommissioning for the Town's consideration in selecting a course of action. Results of our evaluation are summarized below. Concept sketches (5 sheets) of repair and decommissioning alternatives are attached. Table 1 summarizes estimated financial outlay for design, permitting, construction and long-term operation and maintenance for each alternative. Figure 4 includes a decision tree listing possible goals, alternatives, benefits and costs. The detailed evaluation, recommendations, and assumptions on which they are

based, described in the body of this Report, should be read in entirety, reviewed and understood prior to decision and implementation.

- We conceptualized five alternatives to repair the Dam. Each alternative includes replacing the spillway combined with various modifications to the embankment. Estimated average cash outlay of the five repair alternatives for design, permitting and construction range between $450,000 and $930,000. Proper long-term operation and maintenance costs over 30-years are estimated as about $200,000 (in 2013 dollars).
- We conceptualized two alternatives to decommission the Dam – one where the channel flows under the Mill and one where the channel passes through the left end of the Dam, bypassing the Mill. In either option, the Mill and much of the embankments will remain. Estimated average short-term cash outlays are about $300,000 and $750,000, respectively. The higher value includes $400,000 to purchase and demolish the residence at 490 High Street. Long-term cash outlay over 30-years is estimated as about $30,000 for maintenance of the breach opening and channel.
- One possible alternative is for the Town to transfer ownership of (sell) the Dam to another party or group who would then be responsible for repairs and future maintenance of the Dam, or its decommissioning.
- Outside funding (e.g. competitive grants) is likely available for decommissioning the Dam, but not for repair. Funding sources, amounts and competition, however, can vary substantially year-to-year.
- Replacement of the High Street culvert is not a requirement for Dam repair or decommissioning. The Town may consider replacing the culvert to reduce flooding of High Street, whether the Dam is repaired, decommissioned, or divested. Replacing or improving the culvert to improve fish passage may be needed to secure outside funding related to fish passage. We estimate average cash outlay to replace the culvert as about $300,000.
- The Dam is classified as Class B, Significant Hazard. Hazard class may be reduced to Class A, Low Hazard if the residence at 490 High Street is demolished, for which cash outlay is estimated at $400,000. Reducing hazard class would reduce the design flood, however, the vast majority of repairs would still be needed to address deficiencies.
- The Dam has significant deficiencies that increase dam safety risks and are required to be addressed by the New Hampshire Department of Environmental Services (NHDES) Letter of Deficiencies.
- The Dam provides a small hydrologic and hydraulic benefit, reducing (staging) the 100-year flood by about 30 percent and reducing the depth of water flowing over High Street (in the 100-year flood) by about 0.2 ft.
- The Dam can be repaired to pass the design flood while meeting NHDES freeboard requirements and maintaining an impoundment (normal pool). The normal pool elevation (and corresponding pond surface area) has varied significantly over time would need to be selected during design of repairs, with cooperation and approval from the NHDES Dams Bureau.
- Historic resources will affect both repair and decommissioning. In our opinion, effects on the Project from historic resources do not favor either option.
- The Natural Heritage Bureau database contained no rare species and/or exemplary natural communities at the Dam or upstream. Pending further ecological review, effects on the Project from rare species and/or exemplary natural communities likely do not favor either option.
- Initial review of sediment quality found few potential contaminant sources located near the upstream ends of the drainage area, suggesting low likelihood for contaminated soils in the impoundment. Comments from NHDES to initial sediment review were not received as of the date of this Report.

Project Understanding and Background

Our understanding of the Project is described in our Agreement and is based on the following:

- Letter of Deficiency, dated July 11, 2012, issued to Mr. Frederick Welch, Town Manager, Town of Hampton by Steve N. Doyon, PE, Administrator of New Hampshire Department of Environmental Services (NHDES) Dam Safety and Inspection Section;
- Dam Inspection Form, dated July 2, 2012, prepared by Mr. Chuck Corliss of NHDES (NHDES Inspection Report);
- Letter from Mr. Chris Jacobs, PE, Town of Hampton Deputy Director of Public Work, to NHDES transmitting an Operation, Maintenance and Response form completed by the Town;
- Our telephone and email correspondence and meetings with Messrs. Jacobs and Keith Noyes, DPW Director, between September 25, 2012 and present;

Figures 1 and 2 show the Dam location. The Dam impounds Nilus Brook to form Old Mill Pond, just upstream of a former (historic) mill (The Old Grist Mill), a house (490 High Street), and High Street (Rte. 27). Per their 2012 inspection report, NHDES reclassified the Dam from Low to Significant Hazard. The Dam consists of an earth embankment retained by a downstream stone masonry wall with a stone masonry primary spillway and concrete auxiliary spillway. Based on our Site observations and measurements, we estimate the length and height to be about 300 ft. and 11.2 ft., respectively. The Dam discharges to Nilus Brook, which flows beneath/though the mill located at the toe of the spillway. The auxiliary spillway is located on the left embankment 9 ft. from the downstream residential structure at 490 High Street and has no defined discharge channel.

The Town received a Letter of Deficiencies from the State of New Hampshire Department of Environmental Services (NHDES), Dam Bureau, dated July 12, 2012, requiring the Town to repair (reconstruct) or decommission the Dam.

Purpose and Scope of Services

The purpose of SA's services was to evaluate factors and costs associated with the options of repair and decommissioning for the Town's consideration in selecting a course of action. Our scope of services included the following tasks:

1. Consultation, Funding Research, and File Review
2. Attend Two Public Meetings
3. Dam Inspection
4. Hydrologic and Hydraulic (H&H) Evaluation
5. Decommissioning Evaluation, including historic resources, sediment quantity and quality, fisheries and wildlife, infrastructure and land ownership
6. Option Concepts and estimates of cash outlay
7. Report

Except as expressly state herein, SA's scope of services did not include an environmental assessment of any kind, including but not limited to assessments for the presence or absence of wetlands or hazardous or toxic materials or organisms (e.g., fungi, flora, fauna, bacterial, viruses, etc.) in the soil, surface water, groundwater,

or air, on or below or around this Site. Any observations of odors, colors, or unusual or suspicious items or conditions made by SA are incidental to our services, and any statements regarding such observations are strictly for the information of the Client.

Our scope of services excluded detailed evaluation for, and preparation of, final design of repair/reconstruction or decommissioning. More detailed evaluation, design, and permitting of the alternative selected by the Town will be needed under a later phase.

Evaluation

File Review

SA obtained copies of files maintained by the Town and NHDES Dam Bureau on the Dam. Ms. Candice Stellmach of 488 High Street (located at the right end of the Dam) and the Hampton Historical Society, provided a compilation of historical information pertaining to the Dam. From our review of these files, we note the following points:

- NHDES Dam Bureau (and earlier regulatory bodies such as the NH Water Resources Board) have inspected the Dam at various times since 1935. More recent inspections (since about 2000) note deteriorating condition of the Dam.
- The spillway configuration has changed significantly over time:
  - A portion of the Mill formerly extended upstream over the spillway, however this portion was destroyed by fire circa 1961. The embankments formerly abutted the stone masonry walls of this portion, and the upstream opening included stoplogs to control impoundment levels. Little, if any, remnants of this previous portion are currently visible.
  - A 1973 NHDES inspection notes that the "gate spillway failed; patched with stones and logs."
  - Documents indicate that one or more rings of stones at varying elevations were previously located upstream of the spillway, potentially affecting impoundment elevations and discharge, however, most of these stones are now missing, removed, or buried by (perhaps incorporated into) a beaver dam.
- Old Mill Pond normal pool elevation has varied significantly over time as the spillway configuration has changed. Historical photos show the impoundment nearly drained in 1957 and letters prepared by abutters at various times note concerns over low water levels. Currently, the Pond elevation is predominately controlled by a beaver dam.
- The Town engaged James Verra and Associates, Inc. (surveyors) to prepare a plot plan identifying property boundaries around the Dam and Mill in 2009. This plan references a deed recorded in Book 1551, Page 297 at the Rockingham County Registry of Deeds, dated 1960, also contained in the Town's file, which states that Robert M. Crapo et al. granted to the Town of Hampton, NH, "The Easterly Portion of the Grantor's premises with the so-called grist mill thereon, also the mill dam and stream with all the privileges and appurtenances belonging thereto as it was formerly granted by the said Town of Hampton unto John Tuck by the records of said Town made December 29, 1709 and May 22, 1738 and all other grants relating thereto."

Hazard Classification

According to the July 2, 2012 NHDES Inspection Report, NHDES reclassified the Dam to Class B, Significant Hazard from Class A Low Hazard, based primarily on the proximity of the residence at 490 High Street, just downstream of the left embankment and auxiliary outlet. We understand that subsequent discussion between the Town and NHDES concluded that the hazard classification could be reduced to Class A, Low Hazard if the house at 490 High Street is demolished. Based on our subsequent discussion with NHDES, such reduction in hazard classification would reduce the design flood from the 100-year flood to the 50-year flood and would reduce future inspection frequency. The reduction in the design flood could potentially reduce the extent of repairs required to meet hydraulic criteria and/or allow a higher normal pool elevation, however, the vast majority of deficiencies noted in the LOD and by SA herein are unaffected by change in hazard classification and the Dam would still require significant repairs.

Geologic Information

SA reviewed readily-available geologic information in our files and online. The Surficial Geologic Map of the Hampton, NH quadrangle[1] and the NRCS Web Soil Survey[2] generally indicate near-surface soils in the Dam vicinity consist of till (aside from the artificial fill comprising the Dam), with swamp deposits upstream of the dam (at Old Mill Pond). The Bedrock Geologic Map of New Hampshire[3] indicates bedrock consisting of Rye Complex composed of metamorphic rocks, predominantly schists and gneisses. SA found no readily-available, reported bedrock depths or elevations in the vicinity of the Dam. Subsurface explorations will likely be needed in a future phase for design of repairs or decommissioning.

Dam Inspection

SA visually inspected the Dam on June 6, 2013. The Inspection Checklist attached in Appendix A describes our observations in detail. The deficiencies noted below will need to be addressed if the Dam is repaired to remain in service. Based on our visual inspection, we noted the following issues:

- Uneven crest elevation
- Significant number and size of stumps on crest
- Seepage at toe of embankment right of spillway and left of auxiliary spillway
- Lack of erosion protection at spillway and embankment slopes abutting spillway
- Auxiliary spillway has no discharge channel
- Trees within 15 ft. of embankment at left and right ends
- Sinkholes/erosion holes at interface of embankment and stone masonry walls
- Portions of stone masonry walls mis-aligned, tilting, or in disrepair
- Animal burrows at base of stone masonry walls

[1] Koteff, C., Gephardt, G.D., Schafer, J.P., (1989). "Surficial Geologic Map of the Hampton 7.5 Minute Quadrangle (East Half of the Exeter 7.5 x 15 Minute Quadrangle), New Hampshire-Massachusetts," US Geological Survey Open-File Report 89-430.
[2] USDA NRCS Web Soil Survey (2013). "Custom Soil Resource Report for Rockingham County, New Hampshire," accessed by SA on July 10, 2013.
[3] Lyons, J.B., Bothner, W.A., Moench, R.H., and Thompson, J.B., Jr., (1997). Bedrock geologic map of New Hampshire: U.S. Geological Survey, scale 1:250000.

Hydrologic and Hydraulic Evaluation

SA evaluated hydrology and hydraulics (H&H) of Old Mill Pond Dam and its upstream drainage area in the 50- and 100-year, 24-hour storms. The purpose of the analysis was to evaluate flows and water elevations at the Dam and discharge capacity of the existing Dam, and to assist in conceptualizing repair and decommissioning alternatives. The Spillway Design Flood (SDF) for Class B, Significant Hazard dams is the 100-year flood (the flood that has a one chance in 100 of being equaled or exceeded in a period of one year, per NH Code of Administrative Rules Env-Wr 100-800).

Appendix B contains details of the analysis, including rating curves and hydrographs, and Figure 3 outlines the drainage area. Elevations given herein are relative to the National Geodetic Vertical Datum (NGVD) of 1929. The results are sensitive to the starting pool elevation (normal pool) of Old Mill Pond, which is controlled by the configuration of the spillway. Key results are summarized as follows.

- Existing configuration, ***without a beaver dam*** – the Dam can pass the 100-year flood with an impoundment elevation about 1 ft. below the embankment crest (1 ft. freeboard) and about 0.2 ft. below the auxiliary outlet. ***The existing configuration without a beaver dam, however, results in a small, virtually dewatered impoundment (about El. 15, about 0.3 acres) at normal pool.***
- Previous configuration, ***similar to current beaver dam*** – A ring of stones previously located at the upstream end of the spillway and removed in 2012 formerly maintained a higher normal pool elevation. For this previous configuration, we estimate the 100-year flood elevation would be about 0.3 ft. below the embankment crest (0.3 ft. freeboard) and would overflow the auxiliary spillway by about 0.5 ft.
- In either configuration, the 100-year flood exceeds the capacity of the existing Mill opening and flows around the Mill.
- The 100-year flood exceeds the capacity of the High Street culvert, overtopping High Street by about 0.3 ft. The High Street culvert appears to be designed for about 100 cfs (about the 50-year flood).
- The Dam stages about 30 to 32 percent[4] of the 100-year flood; i.e. it reduces downstream flows by about 30 to 32 percent by storing water as the pond fills. The actual benefit, however, appears small, reducing the 100-year flood at the High Street culvert by about 75 cfs and depth of overtopping of High Street by about 0.2 ft. Further, this benefit is provided for short duration, on the order of 2 hours, over which Pond inflow peaks and subsides.

Summary of Hydrologic and Hydraulic Results – Existing Dam Configuration (and without beaver dam)		
Parameter	100-Year Flood	50-Year Flood
Rainfall	9.1 in.	7.6 in.
Peak Inflow to Old Mill Pond	232 cfs	181 cfs
Peak Dam Discharge	157 cfs	104 cfs
Staging by Dam	32%	43%
Peak Impoundment Elevation	17.6 ft. (about 1 ft. freeboard)	17.1 ft. (about 1.5 ft. freeboard)
Water Elevation at High St. Culvert	11.8 ft. (overtops High St. by about 0.3 ft.)	11.6 ft. (overtops High Street by about 0.1 ft.)

[4] Depending on the starting pool elevation.

NHDES regulations require the Dam to pass the design flood with 1 ft. of freeboard to the crest. While the existing configuration ***without a beaver dam*** achieves 1 ft. of freeboard in the 100-year flood, we assume that the Town (and local residents) would prefer a higher normal pool elevation, such as that created by the existing beaver dam, or higher, if the Dam is repaired. Replacing the spillway will be needed to achieve higher normal pool elevation, required discharge capacity and freeboard and to address erosion-related deficiencies of the current spillway and junction with the embankments. The normal pool elevation will need to be evaluated during design of repairs.

Infrastructure

The Mill, residence at 490 High Street, and High Street and its culverts are downstream of, and subject to risk posed by, the Dam.

The predicted 100-year flood inundates High Street for both Dam repair and decommissioning alternatives. As described above, the Dam discharge in the 100-year flood of 157 cfs overtops (floods) High Street by about 0.3 ft. (depth of water on High Street). With the Dam removed, the flow at the culvert would be similar to the current inflow to Old Mill Pond of 232 cfs, and we estimate that the depth of overtopping on High Street would be about 0.5 ft., increasing by about 0.2 ft. compared to existing conditions. Since High Street inundates (overtops) in the 100-year flood in either alternative, the Town may ***consider*** replacing the culvert to reduce flooding of High Street and/or to improve fish and wildlife passage. Replacing the culvert is ***not a requirement***, however, to either decommissioning or repairing the Dam.

The High Street culvert downstream of the Dam is perched (i.e. the culvert invert or bottom is above the stream channel), potentially reducing fish passage. While the Dam can be decommissioned without replacing the culvert, improving fish passage by replacing or improving the culvert may improve likelihood of award of funding from outside sources (described below).

Both alternatives of Dam repair and decommissioning will reduce risks to the Mill. We estimate the opening under the Mill is about 5.9 ft. tall with hydraulic capacity of about 364 cfs. The concepts of Dam repairs include replacing the spillway such that the 100-year flood passes through the Mill opening, rather than flowing around the Mill.

One decommissioning concept would route the channel through the left end of the Dam, after demolition of the residence at 490 High Street, bypassing the Mill.

The second decommissioning option would lower the stream channel elevation to be the same as the channel elevation under the Mill, directing the 100-year flood (and flows up to 364 cfs, or about 160 percent of the 100-year flood) through the Mill. We estimate 100-year flood at the Mill would be about 232 cfs with corresponding depth of about 4.2 ft. and would pass through the Mill. The resulting water elevation at the Mill would be similar to the water elevation controlled by the High Street culvert.

Risks to the residence at 490 High St. can be mitigated by purchasing and demolishing the residence, decommissioning the Dam, or designing Dam repairs with the residence to remain. The Town should be aware, however, that the Dam can be repaired or decommissioned without removing the residence at 490 High Street, and the cash outlay to purchase and remove the residence is substantial in comparison to the costs to repair or decommission the dam, as described below.

Historic Resources

SA prepared and submitted a Request for Project Review (RPR) to New Hampshire Department of Historical Resources (NHDHR) and met with the Town and NHDHR on September 13, 2013. The RPR form and narrative summarizing our initial review and NHDHR's response are contained in Appendix C. In response to the RPR, NHDHR is requesting additional evaluation, specifically a Phase 1A archaeological assessment and completion of an individual inventory form for the Mill and Dam, irrespective of whether the Town elects to repair or decommission the dam. Although an individual inventory form for the Mill was previously prepared by the local residents, NHDHR is requesting that a qualified consultant prepare a new individual inventory form. Table 1 summarizes estimated cash outlay for historical consulting services.

The Phase 1A archaeological assessment includes literature and file review for any known or potential archaeological resources within the project area and recommendations for potential further evaluation, if necessary. Such further evaluation could include Phase 1B assessment (including test pits), archaeological inventory forms, or other detailed documentation of resources identified, depending on results of each stage of evaluation.

Historic resources will need to be evaluated and considered during design of either repair or decommissioning. Such evaluation is part of a process to identify potential impacts to historic resources, avoid impacts where practicable, and mitigate impacts where necessary. In our opinion, historic resources do not significantly favor selection of repair or decommissioning since both options require significant earthwork to modify the Dam.

Sediment, Fisheries and Wildlife

SA evaluated quantity and quality of sediment that may require removal if the Dam is decommissioned. The attached letter to NHDES RRTF dated August 7, 2013 contained in Appendix D summarizes our evaluation. As of the date of this Report, we have not received review comments from NHDES.

SA used the New Hampshire Natural Heritage Bureau (NHB) DataCheck Tool[5] to check for the potential for presence of rare species and/or exemplary natural communities at the Dam and impoundment. The NHB data indicate the presence for swamp rose-mallow (a plant) and Willet (a bird) in Meadow Pond, downstream of the Dam and are attached in Appendix D. Pending further ecological review, effects on the Project from rare species and/or exemplary natural communities likely do not favor either option.

Potential ecological changes from decommissioning include both short-term (temporary) and long-term (permanent) changes. The duration of the short-term changes would vary, but would generally occur during the time period needed to stabilize (i.e. vegetate) the former impoundment and establish a new stream channel. Some potential changes are listed below.

[5] New Hampshire Department of Environmental Services (2013) NHB DataCheck Tool, https://www2.des.state.nh.us/nhb_datacheck/tool.htm, accessed by SA on July 2, 2013

- Potential Short-Term Changes
  - Sediment transport, including turbidity impacts during construction, although these are likely to be equal or greater for dam repair options;
  - Sediment and turbidity impacts and nutrient releases while new stream channel is forming and stabilizing, though these would be substantially mitigated by planned dredging of upstream stream channel;
  - Temporary water temperature changes and fluctuations in dissolved oxygen levels downstream of the Pond due to its draining;
  - Temporary disturbance of local wildlife populations during dam removal activities, which would also be a factor for Dam repairs;
- Potential Long-Term Changes
  - Conversion of open water habitat to riparian or wetland habitat;
  - Potential spread or reduction of invasive species (plant or animal) as a result of improving connectivity and/or changing habitat/vegetation disturbances.
  - Likely lower water temperatures and higher dissolved oxygen levels in the stream through the former impoundment, improving fish habitat.
  - Potential improvements to fish passage, biodiversity, and habitat/stream connectivity.

Land Ownership

Based on the plan and deed described under File Review above, it appears that the deed transferred the Dam to the Town, but prescribed no boundary for the Dam. The concepts for decommissioning and repairs shown herein will likely require easements from abutters, for either temporary construction access and/or to modify the Dam's footprint. If the Town elects to repair the Dam, we recommend that the Town establish a deeded boundary of the Dam with abutters and permanent maintenance easement after the repairs are constructed.

If the Dam is decommissioned, we anticipate that ownership of the remaining land/embankments would be worked out between the Town and respective property owners according to the existing property boundaries. To the extent that the Town owns the stream deeded to it and the Mill, we anticipate that the Town would be responsible for maintaining the resulting breach opening and Mill. Nevertheless, we would defer to the Town's attorney to interpret and negotiate such ownership and any responsibilities for maintenance thereof.

Regardless of the alternative selected to either repair or decommission the Dam, the Town will need temporary easements from abutting properties for construction.

One alternative is for the Town to transfer (sell) ownership of the Dam to another party or group who would then be responsible to address the LOD and for repairs and future maintenance of the Dam, or decommissioning.

Concepts of Alternatives and Costs

The attached sketches, sheets 1 through 5 show concepts of alternatives for decommissioning and repair. The alternatives are shown on the plot plan prepared by James Verra and Associates, Inc. for the Town, referenced above, as base plan. We conceptualized five alternatives to repair the dam, including a downstream buttress (embankment slope) (Sheet 1), a concrete retaining wall (Sheet 1), and three alternatives where the crest is widened upstream combined with either an upstream blanket, a cutoff trench, or excavating and replacing the

embankment to address seepage (Sheet 2). In each of the alternatives to widen the crest upstream, the existing downstream stone wall will remain, but will not be repaired/improved since it would not be relied upon for dam stability. Each of the five repair alternatives includes replacing the spillway (Sheet 3) since the existing spillway provides little erosion protection, if any, and no impoundment controls and the design flood exceeds the existing Mill opening, jeopardizing its foundations. We conceptualized two options for decommissioning, including breaching the Dam at the Mill (Sheet 4) and breaching at the left embankment end (Sheet 5) to bypass the Mill. The option to divest ownership of the existing Dam, described above, is not shown as a sketch because it includes no modifications by the Town.

Figure 4 shows a decision tree listing possible goals, alternatives, benefits and costs. In our judgment, if the Town's goal is to reduce risks and cash outlay (generally 30 years of operation and maintenance), the Dam should be decommissioned (removed) or divested. If the Town's goal is to maintain the impoundment, the Dam could be repaired at substantially greater short- and long-term cash outlay. The alternatives with least cash outlay for design, permitting and construction (short-term) are decommissioning with breach through the spillway, estimated as $300,000 (average), and repairing the dam by widening the crest upstream and installing a cutoff trench, estimated as $450,000 (average). Long-term cash outlay for decommissioning is estimated as $30,000 compared to $200,000 if the Dam is repaired.

Tables 1 and 2 summarize estimated low, average[6] and high cash outlay for each alternative, including design, permitting and construction (referred to together as implementation costs), and long-term cash outlay over a 30-year design life. Table 1 also summarizes estimates of cash outlay for potential optional ancillary improvements (High Street culvert replacement, adding fish passage to the Dam) and other studies. The preliminary estimates of cash outlay for the alternatives are generally based on New Hampshire Department of Transportation published low, average, and high unit costs (cash outlay), supplemented by our judgment and experience on other projects. The cost comparisons given in this Report are based on our conceptual designs and are intended to provide order-of-magnitude, relative costs for qualitative comparison of alternatives. ***We recommend using the average costs for evaluation, comparison between alternatives and decision making.***

Potential for Outside Funding

SA evaluated potential funding for repair and decommissioning by meeting with representatives of the NHDES Dam Bureau, NHDES River Restoration Task Force (RRTF), New Hampshire Fish & Game Department (NHF&G), and NHDES Coastal Program. The results of our evaluation found no funding sources for repairs, though competitive grants for decommissioning are often available from American Rivers, the US Natural Resources Conservation Service, the Environmental Protection Agency, New Hampshire Fish & Game Department, or New Hampshire Coastal Program. Funding sources, amounts and competition, however, can vary substantially year-to-year. Our April 12, 2013 letter to the Town summarizing results of our initial contact with NHDES is attached in Appendix D. Based on our discussions with the entities cited above, it is our opinion that this project would be viewed favorably in competitions for grant funding based on its location near the coast, its size and ease of implementation, but we cannot predict from year to year what funding may be available nor what other projects may compete for the funding.

The goals of the funding organizations are typically related to improving the natural environment, such as restoring fish passage or improving water quality. Design of decommissioning, if selected, may therefore need

[6] Note that the average cash outlay is based on average unit rates for the concept components and is not the average of the total low and high cash outlay estimates.

to include additional improvements to increase likelihood of receiving funding, for example, replacing or improving[7] the High Street culvert to enhance fish passage.

The selection process to secure funding is very competitive. Projects where funding is sought for construction are typically given highest priority, followed by projects where funds are sought for design and permitting. Projects seeking funds for feasibility or other studies are typically the lowest priority to funding organizations. A strong commitment of the dam owner and Town (in this case, one and the same) to the Project are important in competing favorably and in securing (winning) funding.

To complete our scope of services, SA will meet with the Town and present our findings on October 21, 2013. We trust that this Report is sufficient to meet your current needs. If you have any questions, or require clarification, please call us.

Sincerely,
Stephens Associates Consulting Engineers, LLC

Nathaniel A. Olson, Ph.D	James E. Turner	Robert S. Stephens, P.E.
Staff Engineer	Project Manager	Principal Engineer

RSS:tgbg

Attachments:
Figure 1 – Site Location Map
Figure 2 – Site Aerial Photograph
Figure 3 – Drainage Area
Figure 4 – Decision Tree
Concept Sketches, Sheets 1 through 5

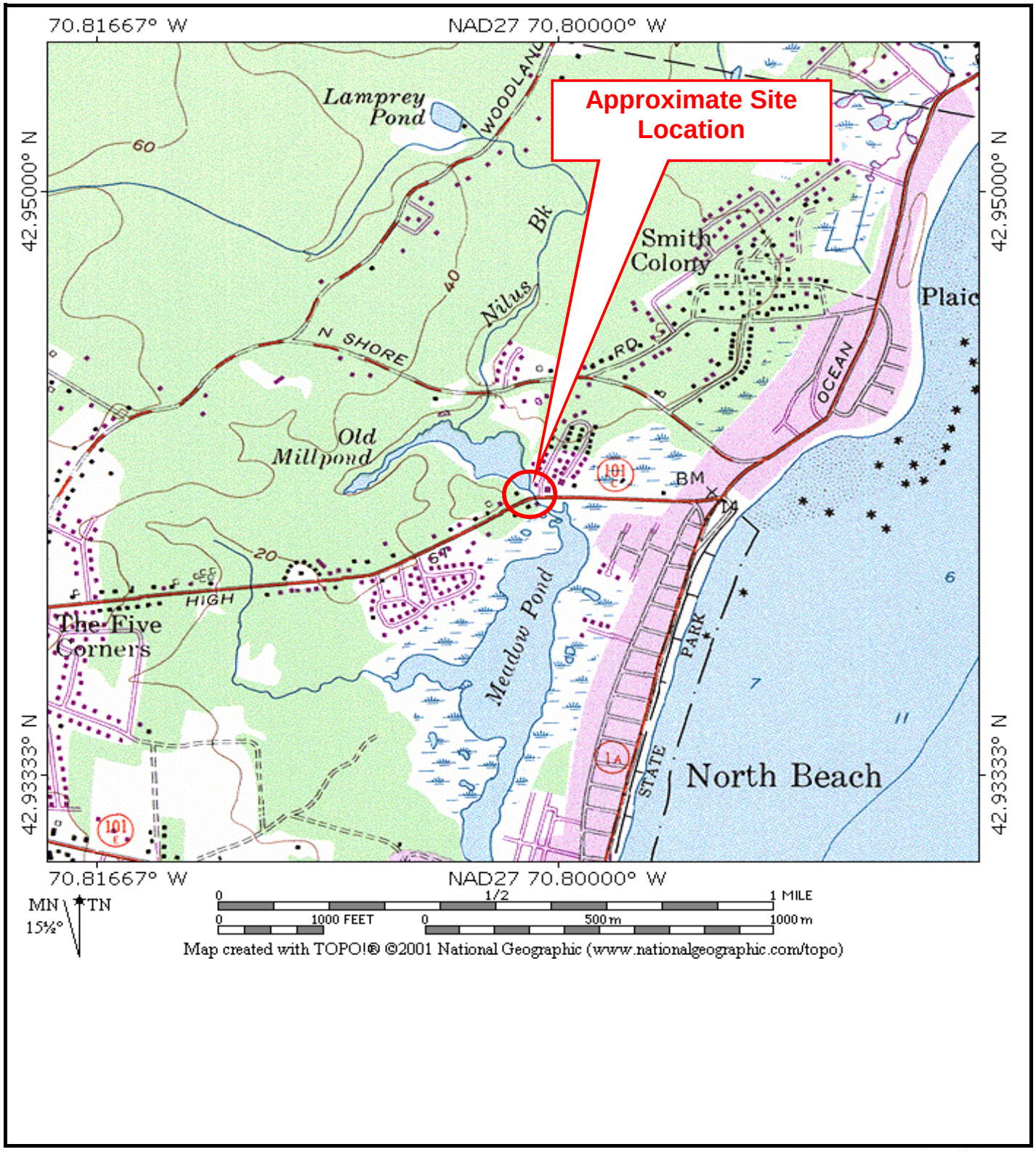
Table 1 – Summary of Preliminary Estimated Financial Costs
Table 2 – Short-Term Cash Outlay Breakdown (7 sheets)

Appendix A – Dam Inspection
Appendix B – Hydrologic and Hydraulic Evaluation
Appendix C – Correspondence with NHDHR
Appendix D – Correspondence with NHDES and Natural Heritage Bureau

[7] If fish passage at the High Street culvert is a concern to funding organization(s), it may be possible to negotiate with those organizations to design and install improvements to the High Street culvert that provide fish passage (e.g. fish ladder or mitigation if the perched outlet, etc.) at lower implementation cost, rather than replacing the culvert at higher cost. Representatives of New Hampshire Fish & Game Department have commented that elvers (eels) are already passing through the current culvert.

FIGURES

Project: Number: 12-035 Sheet 1 of 1
Name: Old Mill Pond Dam, State ID No. 105.03
Hampton, New Hampshire
Original Work:
By: J. Turner Date: March 18, 2013 Subject: **FIGURE 1 - Site Location Map**
Checked By: Date:



Revisions:
By: Date:
By: Date:

Stephens Associates Consulting Engineers
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Structural Geotechnical Hydrology & Hydraulics
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Project: Number: 112-12-002 Sheet 1 of 1
Name: Old Mill Pond Dam, State ID No. 105.03
Hampton, New Hampshire
Subject: **Figure 2 - Site Aerial Photograph**

Original Work:
By: J. Turner Date: March 18, 2013
Checked By: Date:

Source: www.maps.google.com, accessed March 18, 2013

Revisions:
By: Date:
By: Date:

SACE 00-1 (v. 1) 1/00

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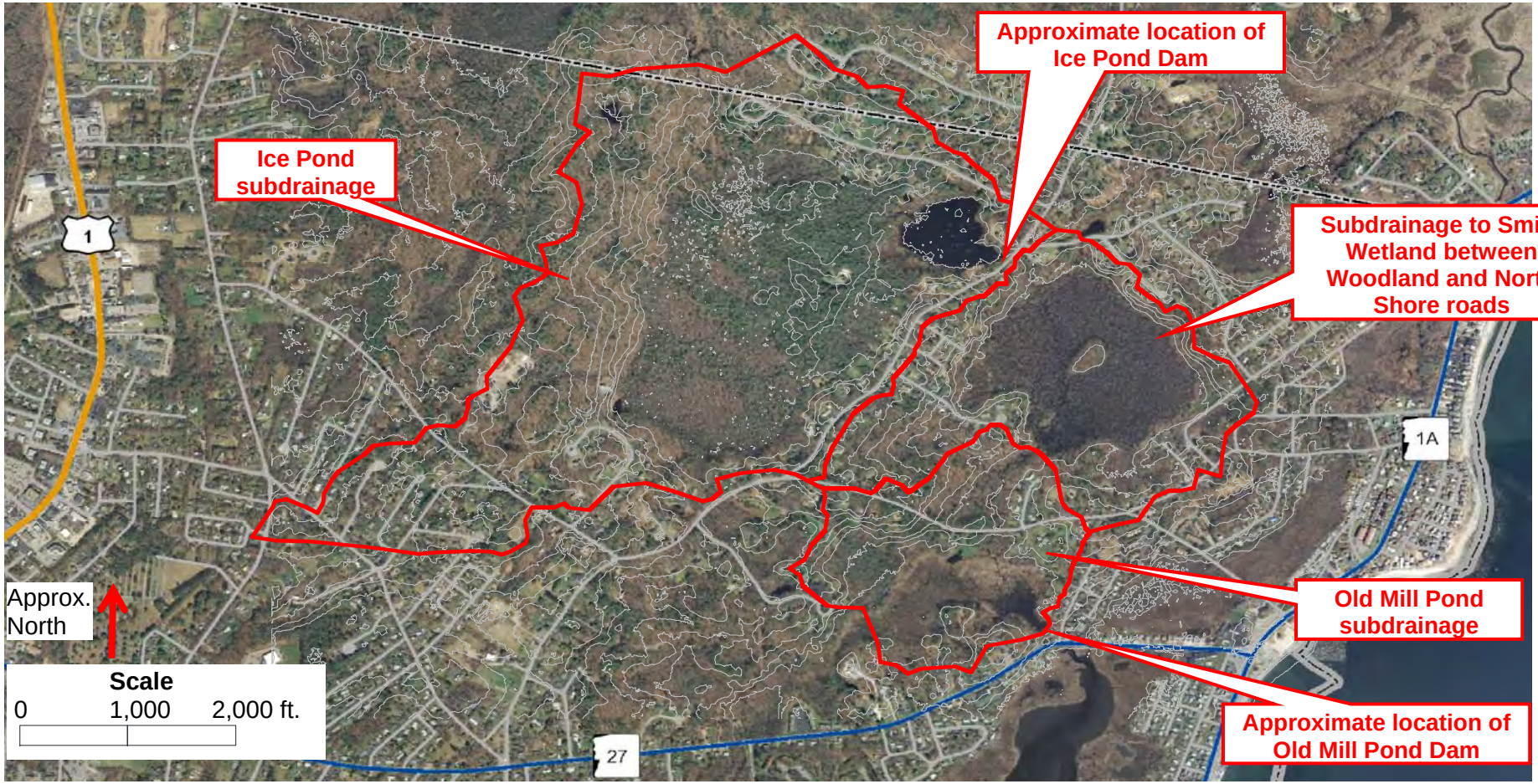
Project: Number: 111-12-002 Sheet 1 of 1
Name: Old Mill Pond Dam, State ID No. 105.03
Hampton, New Hampshire

Original Work:
By: NAO Date: August 7, 2013
Checked By: JET Date: August 7, 2013

Subject: **Figure 3**
Old Mill Pond Dam Drainage Area



NOTES:
1. Aerial photograph from GRANITView, granitview.unh.edu, accessed by SA on July 17, 2013. GRANIT indicates photograph taken in 2010.
2. Topographic contours at 5 ft. intervals produced by AutoCAD Civil 3D using LiDAR data from USGS EarthExplorer, earthexplorer.usgs.gov, acessed by SA on July 2, 2013.
3. Drainage area and subdrainages delineated by SA based on topographic contours, aerial photography and engineering judgment.
4. Topography/drainage areas overlaid/scaled on aerial photograph manually by SA, based on visual correlation with land features (e.g. Ice Pond, Old Mill Pond, etc.).

Revisions:
By: _____ Date: _____
By: _____ Date: _____

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Project: Number: 111-12-002 Sheet 1 of 1
Name: Old Mill Pond Dam
Hampton, NH
Initial Study of Alternatives
Subject: **FIGURE 4 - Decision Tree**

Original Work:
By: J. Turner Date: October 11, 2013
Checked By: RSS Date: October 11, 2013

GOALS	ALTERNATIVE SOLUTIONS		BENEFITS		COSTS
Reduce Risks and Costs	**Divest Ownership (Transfer/sell to Others)**		• Reduces short- and long-term cash outlay and • Responsibility for repairs, operation and maintenance or decommissioning transferred to others		• Estimated short-term cash outlay = from $0 to lowest cost of other alternatives ($300,000) • Estimated long-term (30-year) cash outlay = $0
	Decommission (Remove) Dam	Breach Spillway and excavate channel leading to Mill, eliminating impoundment; retain much of stone wall and embankment (Sheet 4)	• Reduces risks to residence at 490 High St. and to High Street from dam overtopping and breach • Reduces future operation, inspection and maintenance costs • May reduce Town's liability and possibly insurance cost. • Meets Regulatory requirements • Dam removed from state jurisdiction • Does not increase extent of Dam	• Likely less costly to Town than repair, particularly if grants obtained • Potentially less historical impacts than repair	• Impoundment and its uses for abutters • Increased flows at High Street culvert. Marginal increase in overtopping in 50- and 100-year floods • Average estimated short-term cash outlay = $300k • Estimated long-term (30-year) cash outlay = $30k
		Breach dam near left abutment, demolish 490 High St. Structure & excavate channel bypassing Mill and eliminating impoundment; retain much of stone wall and embankment (Sheet 5)		• Could be less costly than repair if grants obtained • Likely least historical impacts, least modification near Mill	• Impoundment and its uses for abutters • Increased flows at High Street culvert. Marginal increase in overtopping in 50- and 100-year floods • Purchase and demolition of residence at 490 High St. • Average estimated short-term cash outlay = $750k • Estimated long-term (30-year) cash outlay = $30k
Maintain an Impoundment	**Repair/ Reconstruct Dam** Address Deficiencies, Regulatory Requirements, and Risks to Dam Safety Replace Spillway (Sheet 3) for All Repair Alternatives	Downstream Buttress (Sheet 1, Detail B)	• Demolish 490 High St. structure • Regrade Crest • Stabilize dam and control seepage with embankment buttress • Remove existing stone wall	• Maintains an impoundment • Addresses deficiencies • Passes Q_{100} with 1 ft. freeboard • Reduces risk of Dam breach from overtopping and piping • Meets Regulatory requirements • Dam continues to stage water, reducing flow at High Street Culvert in 100-year flood (compared to dam removal), but High Street still overtops in 100-year flood;	• Eliminates risk to 490 High Street residents • More work on Town owned or acquired property • Maintains similar upstream extent of Dam • Potentially easier access to Dam crest via downstream slope (e.g. for maintenance) • Cost is least susceptible to potential for environmental contamination in impoundment	• Purchase and demolition of residence at 490 High St. • Change of appearance from stone masonry wall to vegetated slope • Continued long-term operation, maintenance, & inspection costs • Average estimated short-term cash outlay = $860k • Estimated long-term (30-year) cash outlay = $200k
		Concrete Retaining Wall (Sheet 1, Detail C)	• Regrade crest • Stabilize dam and control seepage with concrete wall • Remove existing stone wall and reuse as downstream facing		• Maintains similar extent (footprint) of Dam, and smaller extent than other repair options • Maintains similar appearance with stone masonry facing	• Continued long-term operation, maintenance, & inspection costs • Potentially more historical/cultural impact than other options • Existing stone masonry wall removed, reused as facing • Average estimated short-term cash outlay = $930k • Estimated long-term (30-year) cash outlay = $200k
		Upstream Crest Cut-off Trench (Sheet 2, Detail E)	• Regrade and widen crest • Control seepage with cut-off trench		• Maintains existing stone wall, but no longer relies on it for stability • Maintains similar appearance to existing • Potentially least costly repair alternative	• Dam enlarged upstream • Continued long-term costs for operation, maintenance, and inspection • Average estimated short-term cash outlay = $450k • Estimated long-term (30-year) cash outlay = $200k
		Upstream Crest Replace Embankment (Sheet 2, Detail F)	• Regrade and widen crest • Control seepage by excavating and reconstructing embankment		• Maintains existing stone wall, but no longer relies on it for stability • Maintains similar appearance to existing • Larger excavation extent allows examination and potential mitigation of seepage	• Dam enlarged upstream • Continued long-term costs for operation, maintenance, and inspection • Average estimated short-term cash outlay = $540k • Estimated long-term (30-year) cash outlay = $200k
		Upstream Crest Upstream Blanket (Sheet 2, Detail G)	• Regrade and widen crest • Control seepage with upstream blanket of low permeability fill		• Maintains existing stone wall, but no longer relies on it for stability • Maintains similar appearance to existing • Reduces excavation of existing Dam and potential historical impacts	• Dam significantly enlarged upstream • Continued long-term costs for operation, maintenance, and inspection • Average estimated short-term cash outlay = $470k • Estimated long-term (30-year) cash outlay = $200k

Revisions:
By: Date:
By: Date:

NOTES: The purpose of this Decision Tree is to aid the Town in understanding and evaluating Conceptual Options related to Old Mill Pond Dam. This Decision Tree should be considered in conjunction with SA's Report of Initial Study of Alternatives. Estimated costs for design, permitting and construction. Estimated costs are based on conceptual designs and are intended to provide orger-of-magnitude costs for qualitative comparison of alternatives and are in today's dollars (2013).

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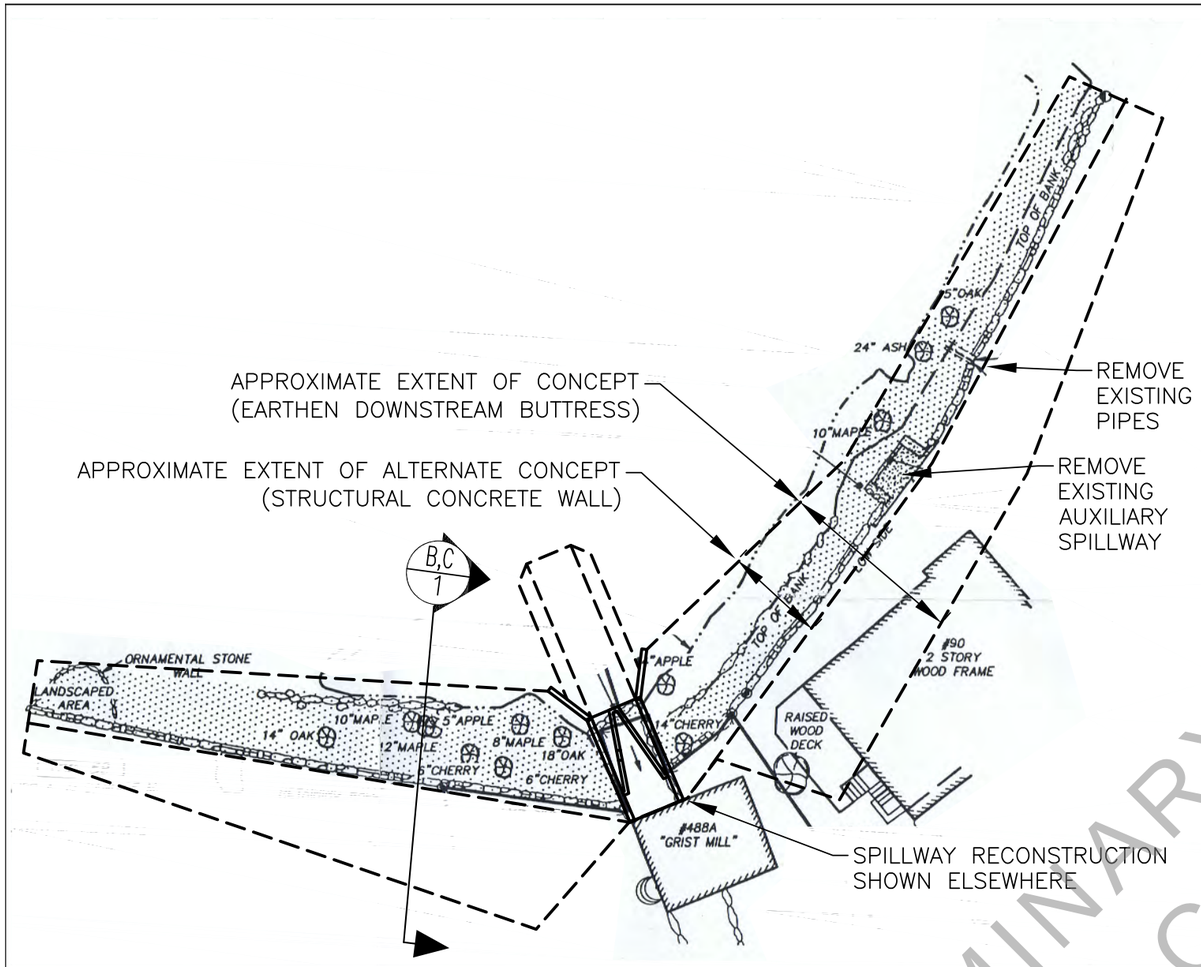

A 1 EMBANKMENT CONCEPT 1 PLAN

Approximate Scale

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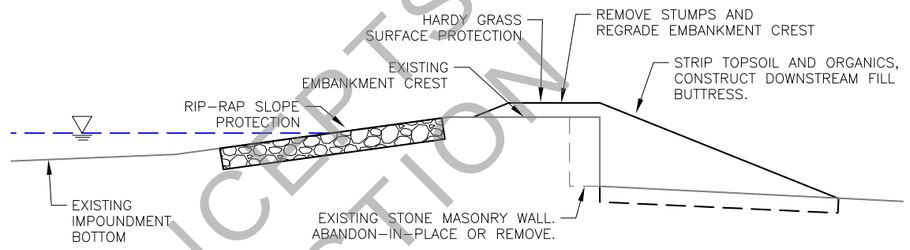
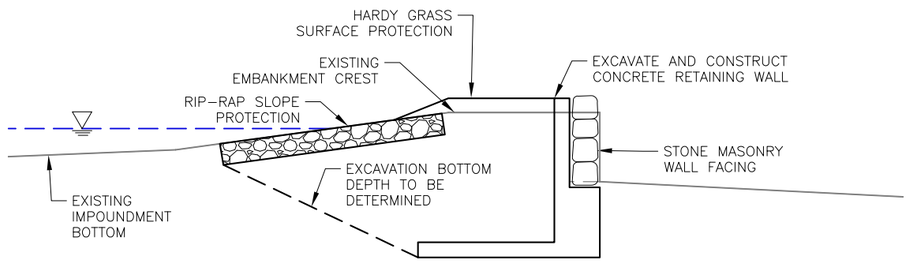


B 1 EARTHEN DOWNSTREAM BUTTRESS CONCEPT SECTION

Approximate Scale

0 5 10 ft.



C 1 ALTERNATE EMBANKMENT CONCEPT – STRUCTURAL CONCRETE WALL CONCEPT

Approximate Scale

0 5 10 ft.

NOTES:

1. PURPOSE OF SKETCH IS TO SHOW EMBANKMENT RECONSTRUCTION CONCEPTS. SKETCH IS NOT FOR CONSTRUCTION.
2. BASE PLAN TITLED "PLAT OF GRIST MILL & 488A HIGH STREET, HAMPTON, NH, ASSESSOR'S PARCEL 150–52," DATED DECEMBER 14, 2009, PREPARED BY JAMES VERRA AND ASSOCIATES AND PROVIDED TO SA BY TOWN OF HAMPTON.
3. REFER TO LETTER REPORT FOR DISCUSSION OF CONCEPTS.
4. BOUNDARY OF DAM IS NOT SHOWN. AS RECORDED IN BOOK 1551, PAGE 297, ROCKINGHAM COUNTY REGISTRY OF DEEDS, ROBERT M. CRAPO ET AL. GRANTED TO TOWN OF HAMPTON, NH "THE EASTERLY PORTION OF THE GRANTOR'S PREMISES WITH THE SO–CALLED GRIST MILL THEREON, ALSO THE MILL DAM AND STREAM WITH ALL THE PRIVILEGES AND APPURTENANCES BELONGING THERETO AS IT WAS FORMERLY GRANTED BY THE SAID TOWN OF HAMPTON UNTO JOHN TUCK BY THE RECORDS OF SAID TOWN MADE DECEMBER 29, 1709 AND MAY 22, 1738 AND ALL OTHER GRANTS RELATING THERETO."

N APPROX.

Vertical Datum: NGVD 1929

Horizontal Datum: Project

Original Drawing Size = 11 x 17 in.

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Hampton, New Hampshire

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TOWN OF HAMPTON
Department of Public Works
11 Hardart's Way
Hampton, New Hampshire

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Checked By: JET Date: 9/27/13
Checked By: RSS Date: 9/27/13
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Revisions:
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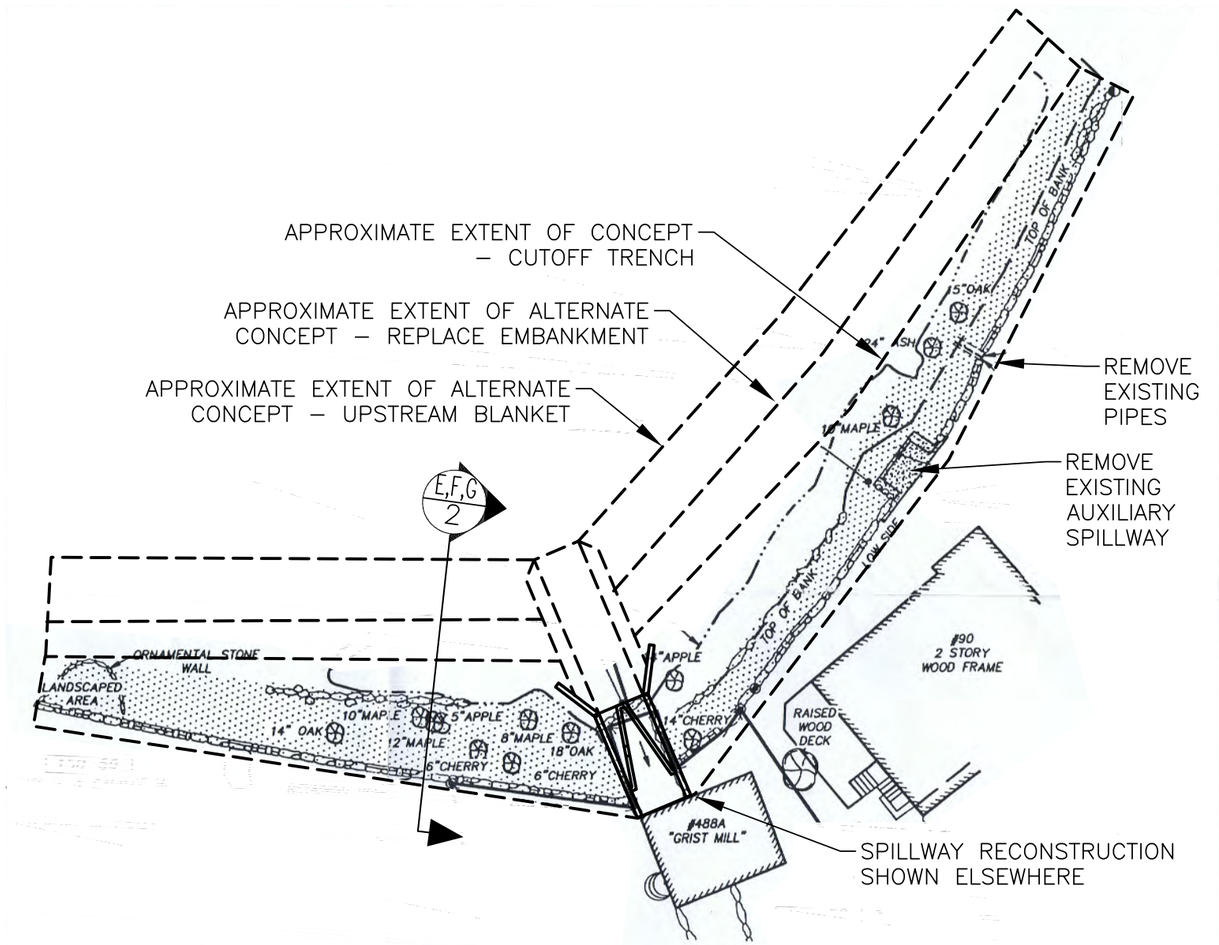
Phone (978)988-2115; Fax (978)988-2117

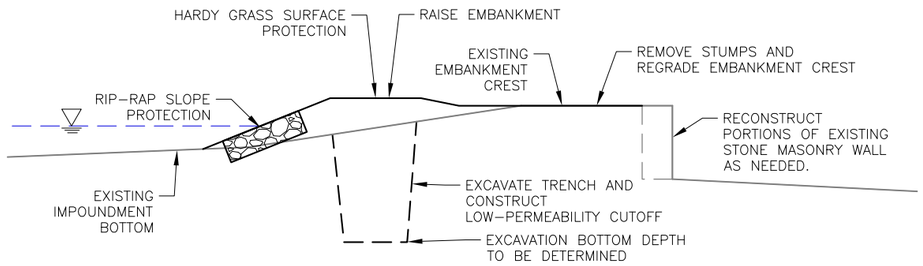
Project: Sheet 1 of 5
Number: 111-12-002
Name: **Old Mill Pond Dam**
Initial Study of Alternatives
Hampton, New Hampshire
Subject: **Embankment Reconstruction Sketches - Concept 1**



D 2 EMBANKMENT CONCEPT 2 – WIDEN CREST PLAN

Approximate Scale

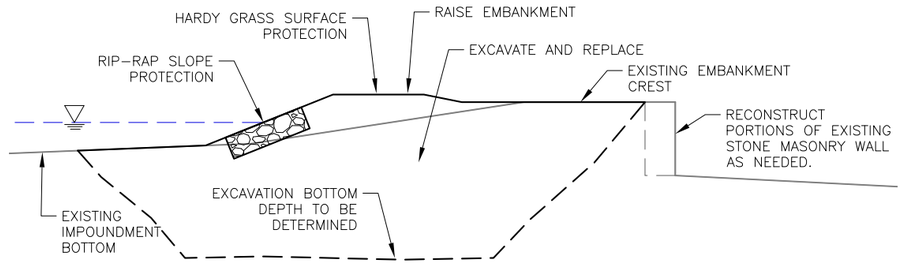
0 15 30 ft.



E 2 EMBANKMENT CONCEPT – CUTOFF TRENCH SECTION

Approximate Scale

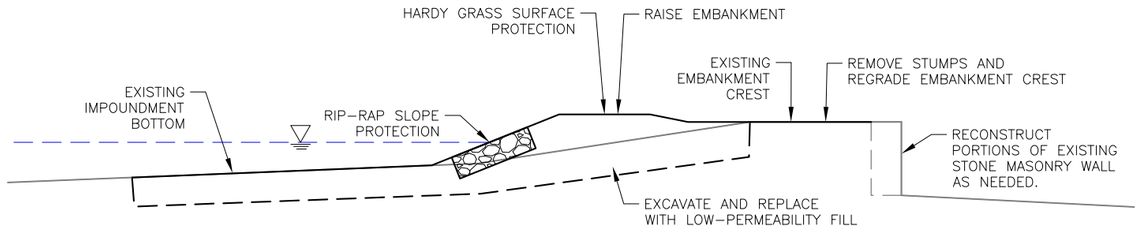
0 5 10 ft.



F 2 ALTERNATE EMBANKMENT CONCEPT – REPLACE EMBANKMENT SECTION

Approximate Scale

0 5 10 ft.



G 2 ALTERNATE EMBANKMENT CONCEPT – UPSTREAM BLANKET SECTION

Approximate Scale

0 5 10 ft.

NOTES:

1. PURPOSE OF SKETCH IS TO SHOW EMBANKMENT RECONSTRUCTION CONCEPTS. SKETCH IS NOT FOR CONSTRUCTION.
2. BASE PLAN TITLED "PLAT OF GRIST MILL & 488A HIGH STREET, HAMPTON, NH, ASSESSOR'S PARCEL 150–52," DATED DECEMBER 14, 2009, PREPARED BY JAMES VERRA AND ASSOCIATES AND PROVIDED TO SA BY TOWN OF HAMPTON.
3. REFER TO LETTER REPORT FOR DISCUSSION OF CONCEPTS.
4. BOUNDARY OF DAM IS NOT SHOWN. AS RECORDED IN BOOK 1551, PAGE 297, ROCKINGHAM COUNTY REGISTRY OF DEEDS, ROBERT M. CRAPO ET AL. GRANTED TO TOWN OF HAMPTON, NH "THE EASTERLY PORTION OF THE GRANTOR'S PREMISES WITH THE SO–CALLED GRIST MILL THEREON, ALSO THE MILL DAM AND STREAM WITH ALL THE PRIVILEGES AND APPURTENANCES BELONGING THERETO AS IT WAS FORMERLY GRANTED BY THE SAID TOWN OF HAMPTON UNTO JOHN TUCK BY THE RECORDS OF SAID TOWN MADE DECEMBER 29, 1709 AND MAY 22, 1738 AND ALL OTHER GRANTS RELATING THERETO."

N APPROX.

Vertical Datum: NGVD 1929

Horizontal Datum: Project

Original Drawing Size = 11 x 17 in.

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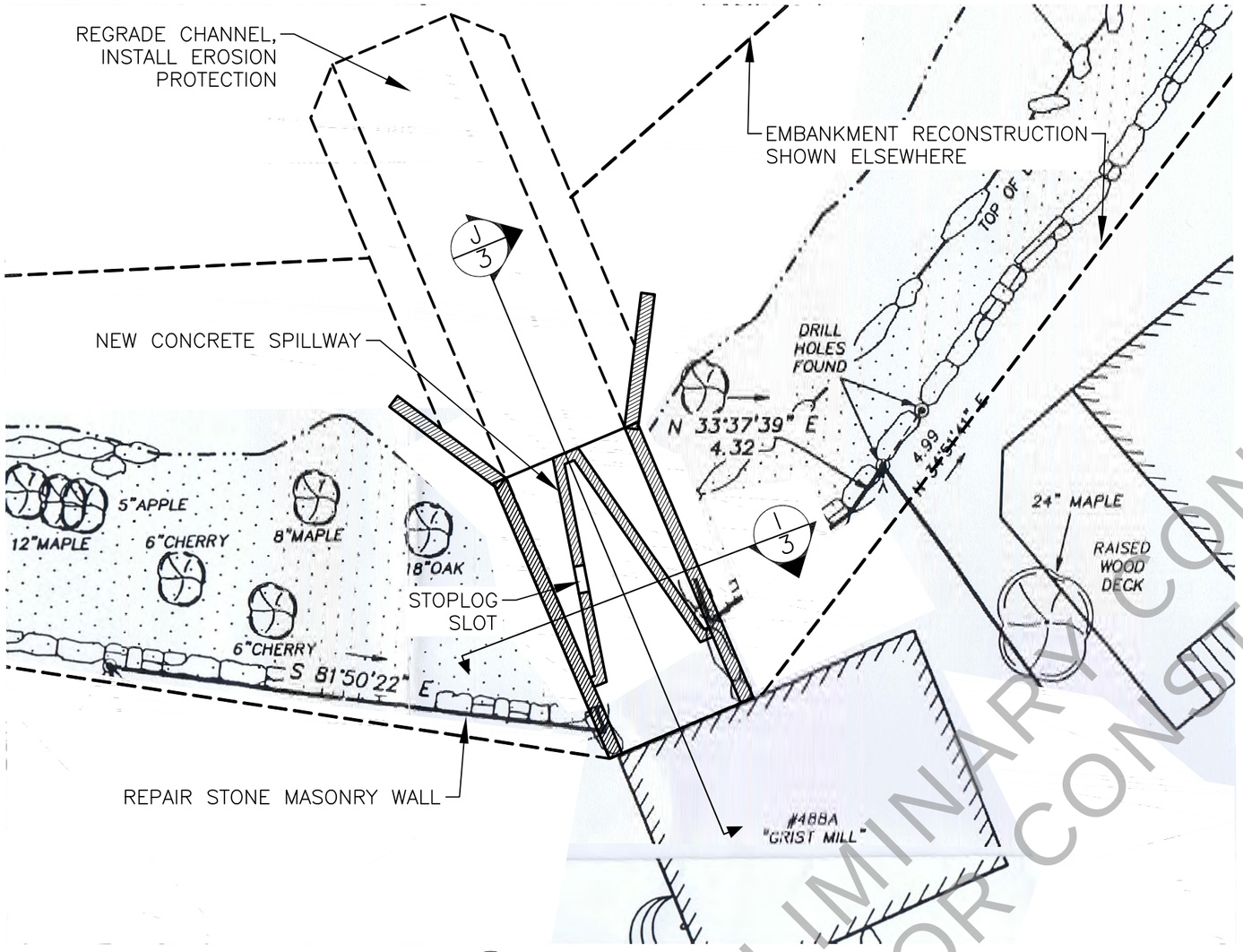
Phone (978)988-2115; Fax (978)988-2117

Project: Sheet 2 of 5
Number: 111-12-002
Name: **Old Mill Pond Dam Initial Study of Alternatives Hampton, New Hampshire**
Subject: **Embankment Reconstruction Sketches - Concept 2**



H/3 SPILLWAY REPAIR PLAN

NOTES:

1. PURPOSE OF SKETCH IS TO SHOW SPILLWAY RECONSTRUCTION CONCEPT. SKETCH IS NOT FOR CONSTRUCTION.
2. BASE PLAN TITLED "PLAT OF GRIST MILL & 488A HIGH STREET, HAMPTON, NH, ASSESSOR'S PARCEL 150–52," DATED DECEMBER 14, 2009, PREPARED BY JAMES VERRA AND ASSOCIATES AND PROVIDED TO SA BY TOWN OF HAMPTON.
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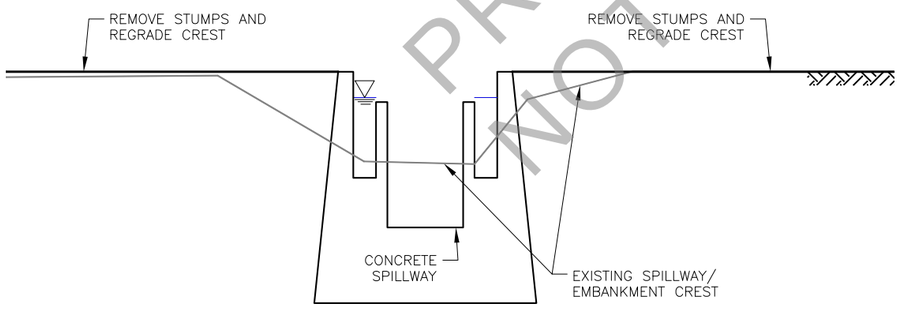
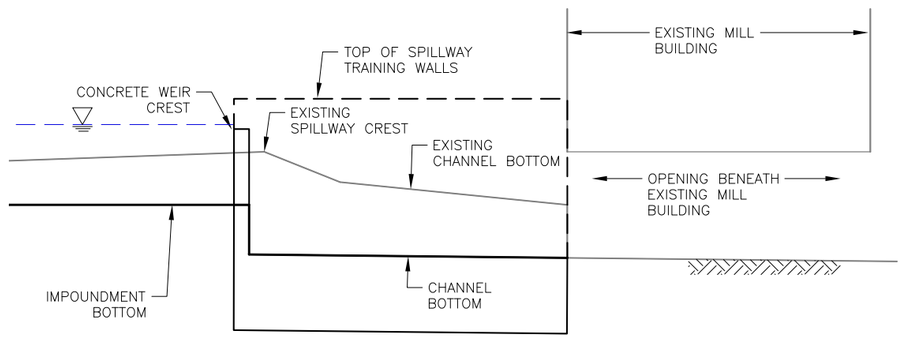


I/3 SPILLWAY REPAIR SECTION



J/3 SPILLWAY REPAIR SECTION

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Vertical Datum: NGVD 1929

Horizontal Datum: Project

Approximate Scale

0 5 10 ft.

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Revisions:
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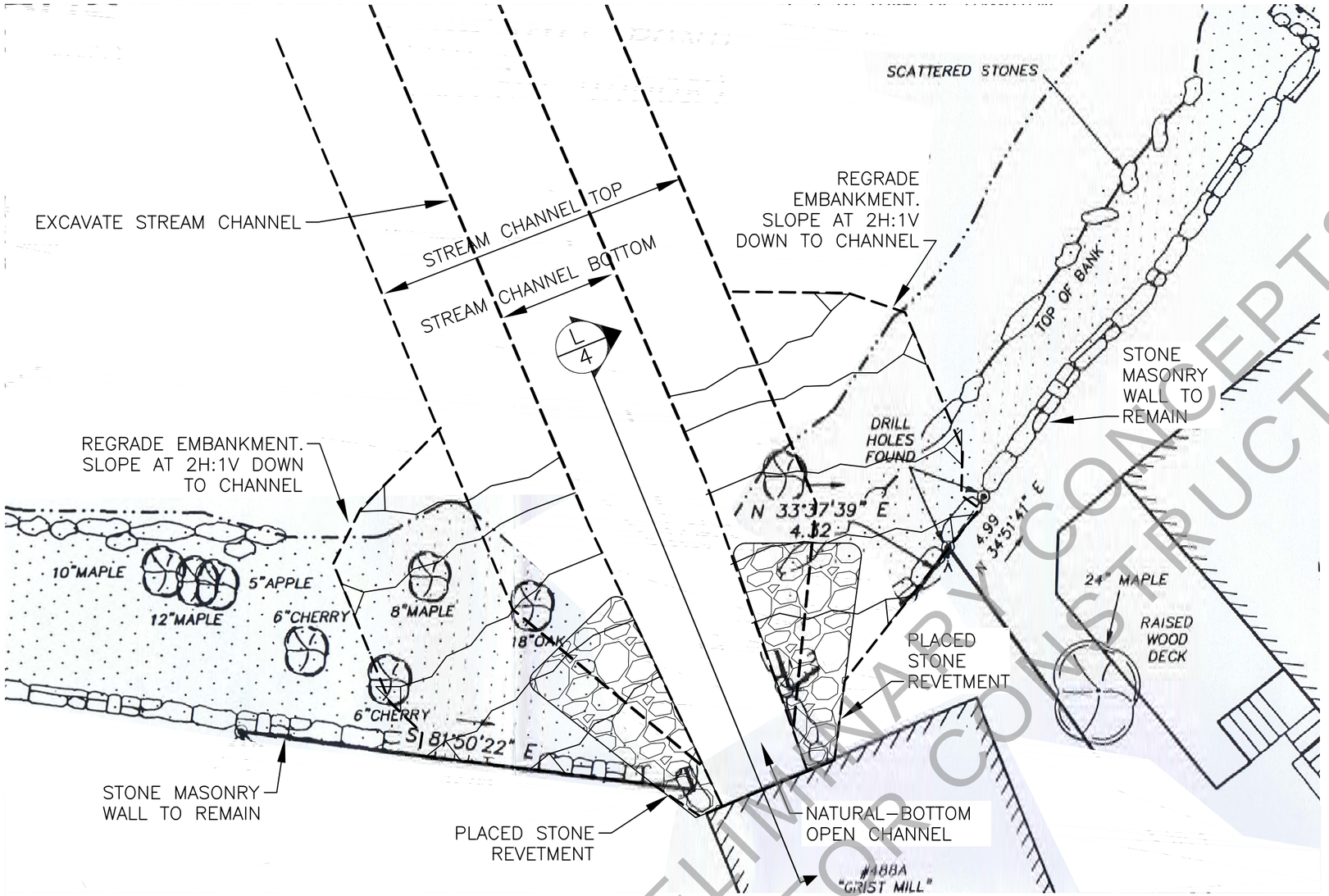
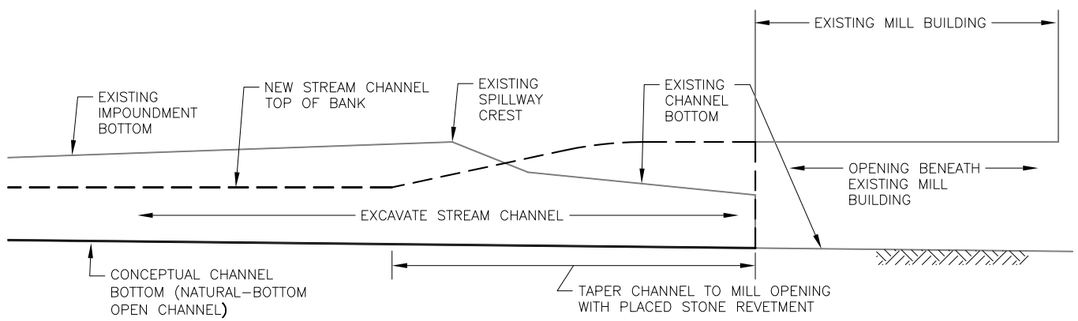
Project: Sheet 3 of 4
Number: 111-12-002

Name: **Old Mill Pond Dam**
Initial Study of Alternatives
Hampton, New Hampshire

Subject: **Spillway Reconstruction Concept Sketches**



K 4 DECOMMISSIONING PLAN



L 4 DECOMMISSIONING SECTION

NOTES:

1. PURPOSE OF SKETCH IS TO SHOW DAM DECOMMISSIONING CONCEPT. SKETCH IS NOT FOR CONSTRUCTION.
2. BASE PLAN TITLED "PLAT OF GRIST MILL & 488A HIGH STREET, HAMPTON, NH, ASSESSOR'S PARCEL 150-52," DATED DECEMBER 14, 2009, PREPARED BY JAMES VERRA AND ASSOCIATES AND PROVIDED TO SA BY TOWN OF HAMPTON.
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N APPROX.

Vertical Datum: NGVD 1929

Horizontal Datum: Project

Approximate Scale

0 5 10 ft.

Original Drawing Size = 11 x 17 in.

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CLIENT

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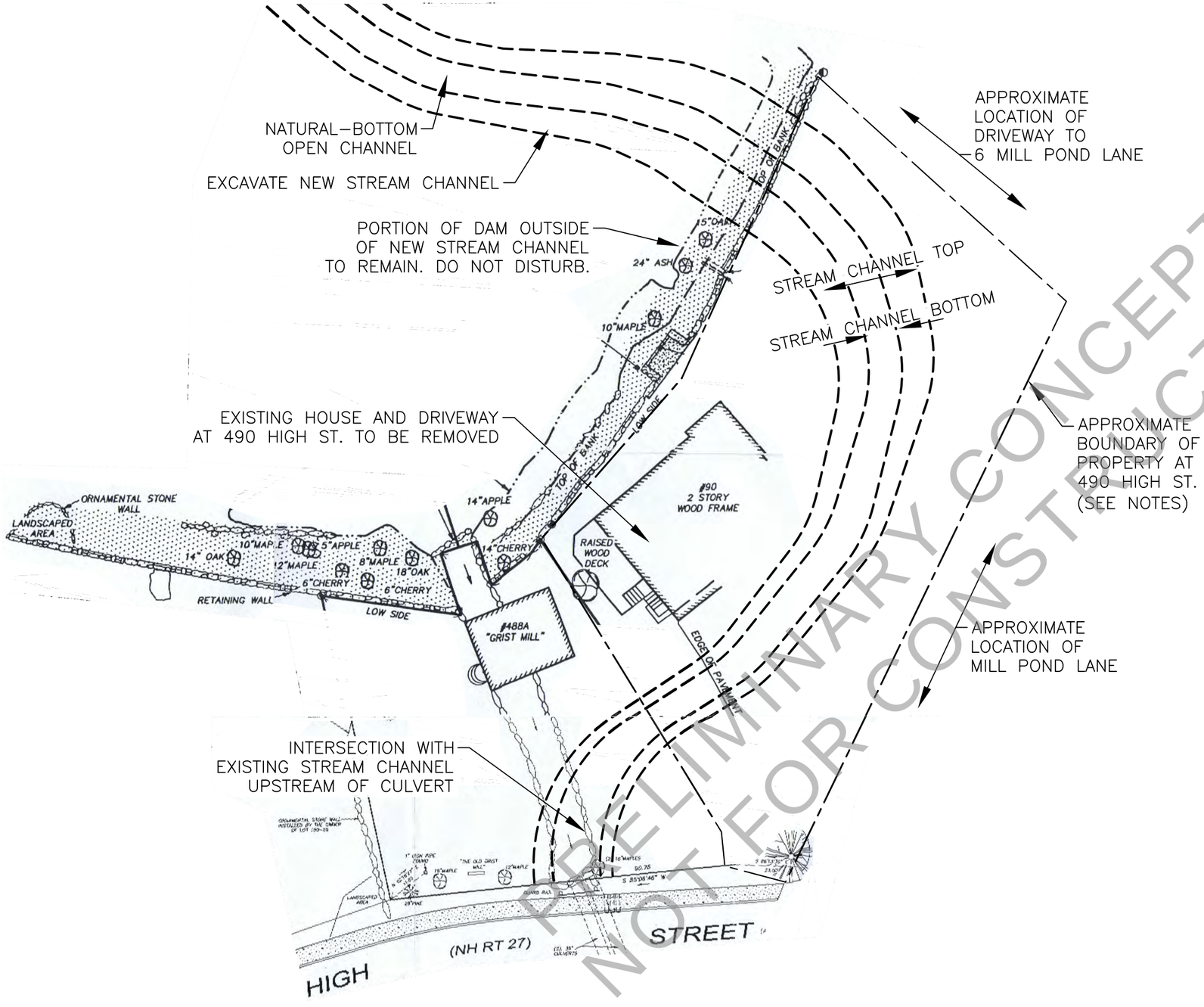
Project: Sheet 4 of 4
Number: 111-12-002
Name: **Old Mill Pond Dam**
Initial Study of Alternatives
Hampton, New Hampshire
Subject: **Decommissioning Concept Sketches**



M 5 DECOMMISSIONING ALTERNATE PLAN

NOTES:

1. PURPOSE OF SKETCH IS TO SHOW DAM DECOMMISSIONING ALTERNATE CONCEPT. SKETCH IS NOT FOR CONSTRUCTION.
2. BASE PLAN TITLED "PLAT OF GRIST MILL & 488A HIGH STREET, HAMPTON, NH, ASSESSOR'S PARCEL 150–52," DATED DECEMBER 14, 2009, PREPARED BY JAMES VERRA AND ASSOCIATES AND PROVIDED TO SA BY TOWN OF HAMPTON.
3. BASE PLAN CONSISTED OF TWO PLAN VIEWS: ONE OF THE GRIST MILL PROPERTY (WHICH DOES NOT SHOW ENDS OF EMBANKMENT) AND ONE OF THE DAM AREA (WHICH DOES NOT SHOW CULVERT). FOR THE BASE PLAN SHOWN ON THIS SHEET, SA COMBINED THESE PLAN VIEWS.
4. REFER TO LETTER REPORT FOR DISCUSSION OF CONCEPTS.
5. BOUNDARY OF DAM IS NOT SHOWN. AS RECORDED IN BOOK 1551, PAGE 297, ROCKINGHAM COUNTY REGISTRY OF DEEDS, ROBERT M. CRAPO ET AL. GRANTED TO TOWN OF HAMPTON, NH "THE EASTERLY PORTION OF THE GRANTOR'S PREMISES WITH THE SO–CALLED GRIST MILL THEREON, ALSO THE MILL DAM AND STREAM WITH ALL THE PRIVILEGES AND APPURTENANCES BELONGING THERETO AS IT WAS FORMERLY GRANTED BY THE SAID TOWN OF HAMPTON UNTO JOHN TUCK BY THE RECORDS OF SAID TOWN MADE DECEMBER 29, 1709 AND MAY 22, 1738 AND ALL OTHER GRANTS RELATING THERETO."
6. BOUNDARY OF PROPERTY AT 490 HIGH STREET SKETCHED BY SA BASED ON PROPERTY OUTLINE SHOWN ON TOWN OF HAMPTON TAX MAP 150, DIGITIZED AND UPDATED IN 1996 BY CARTOGRAPHIC ASSOC. INC. FROM ORIGINAL MAPS PREPARED BY G & UNDERWOOD ENGINEERS, INC., DOWNLOADED BY SA FROM TOWN WEBSITE. PROPERTY BOUNDARY IS APPROXIMATE, AND IS SHOWN ONLY TO INDICATE CONCEPTUAL STREAM CHANNEL LOCATION RELATIVE TO OTHER SITE FEATURES (E.G. MILL POND LANE, ETC.)

N APPROX.

Vertical Datum: NGVD 1929

Horizontal Datum: Project

Approximate Scale

0 15 30 ft.

Original Drawing Size = 11 x 17 in.

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668 Main Street, Ste. 250, Wilmington, MA 01887
Phone (978)988-2115; Fax (978)988-2117

Project: Sheet 5 of 5
Number: 111-12-002
Name: **Old Mill Pond Dam**
Initial Study of Alternatives
Hampton, New Hampshire
Subject: **Decommissioning**
Alternate Concept Sketch

TABLES

TABLE 1 - SUMMARY OF PRELIMINARY ESTIMATED FINANCIAL COSTS (2013 Dollars)

		Range of Short-Term Costs[1]			Long-Term Costs[1]
Concept Alternative[2]	**Concept Sketch Reference**	**High**	**Average**	**Low**	
Divest Ownership	none	≤ lowest cost of other alternatives		$0	$0
Decommissioning	Sheet 4	$400,000	$300,000	$220,000	$30,000
Cutoff Trench Repair	Sheet 2, Detail E	$620,000	$450,000	$310,000	$200,000
Upstream Blanket Repair	Sheet 2, Detail G	$650,000	$470,000	$320,000	$200,000
Replace Embankment Repair	Sheet 2, Detail F	$760,000	$540,000	$370,000	$200,000
Decommissioning Alternate[3]	Sheet 5	$910,000	$750,000	$610,000	$30,000
Downstream Buttress Repair[3]	Sheet 1, Detail B	$1,080,000	$860,000	$680,000	$200,000
Concrete Wall Repair	Sheet 1, Detail C	$1,320,000	$930,000	$630,000	$200,000

Other Improvements[4]	**High**	**Average**	**Low**
High Street Culvert Replacement	$345,000	$300,000	$255,000
Add fish passage to spillway replacement	$45,000	$35,000	$25,000

Historical and Ecological Consulting Estimates[5]	**Consultant 1**	**Consultant 2**
Phase 1A Archaeology	$2,350	$3,530
Individual Inventory Form	$3,230	$6,000
Ecological Study	$3,270	

[1] Estimated costs are based on conceptual designs and are intended to provide order-of-magnitude costs for qualitative comparison of alternatives. Refer to SA's Report of Initial Study of Alternatives for limitations and further information. Short-term costs include design, permitting and construction, with a 20 percent contingency. Low, high and average costs estimated from low, high, and average unit costs for the concept components. Average costs shown are not the average of the high and low estimates. Long-term costs include operation and maintenance over 30-years in 2013 dollars.

[2] Each alternative for repair includes replacement of the spillway shown on concept sketch sheet 3. Decommissioning alternatives include cost for dredging a new stream channel through the former impoundment.

[3] Includes average cost of $400,000 to purchase and demolish residence at 490 High Street, increased/decreased by 10% for high/low costs.

[4] Other optional improvements; not requirements to decommission or repair dam. Costs for other improvements not included in costs for alternatives above.

[5] Costs for historical evaluation included in concept alternatives. Costs for ecological study included in alternatives for decommissioning.

DOWNSTREAM BUTTRESS

	Source	High	Average	Low
Earthwork				
Clearing and grubbing	NHDOT	$ 4,300	$ 2,700	$ 1,600
Excavation/Dredging	NHDOT	$ 9,400	$ 5,000	$ 3,100
Remove and stockpile stone wall	RS Means	$ 3,900	$ 3,300	$ 2,600
Loam/Seed	NHDOT	$ 2,600	$ 1,300	$ 700
Riprap	NHDOT	$ 15,600	$ 13,000	$ 10,400
Fill	NHDOT	$ 24,400	$ 17,100	$ 9,800
Fill Testing	Assumed	$ 15,000	$ 12,000	$ 9,000
General				
Mobilization/Demobilization	Prev. Proj.	$ 60,000	$ 40,000	$ 20,000
Field Office	NHDOT	$ 4,700	$ 4,200	$ 4,000
SWPPP, Erosion, Cofferdam	Wiswall Dam	$ 20,000	$ 15,000	$ 10,000
Concrete Structures				
Spillway	Prev. Proj.	$ 200,000	$ 135,000	$ 90,000
Concrete Testing	Assumed	$ 5,000	$ 4,000	$ 3,000
Details				
Stoplogs and Pullers	Assumed	$ 5,000	$ 4,000	$ 3,000
Other details (staff gages, signs, etc.)	Assumed	$ 5,000	$ 4,000	$ 3,000
Fences	Assumed	$ 5,000	$ 4,000	$ 3,000
Construction Subtotal		$ 379,900	$ 264,600	$ 173,200
Contingency - Assume 20% of construction subtotal		$ 76,000	$ 52,900	$ 34,600
Purchase and Demolish 490 High Street		$ 440,000	$ 400,000	$ 360,000
Engineering Design and Permitting		$ 118,800	$ 95,000	$ 71,300
Construction Engineering Administration		$ 62,500	$ 50,000	$ 37,500
Preliminary Estimate of Short-term Cash Outlay		$1,080,000	$ 860,000	$ 680,000

NOTE: Estimated costs are based on conceptual designs and are intended to provide order-of-magnitude costs for qualitative comparison of alternatives. Refer to SA's Report of Initial Study of Alternatives for limitations and further information. Short-term costs include design, permitting and construction, with a 20 percent contingency. Low, high and average costs estimated from low, high, and average unit costs for the concept components. Average costs shown are not the average of the high and low estimates.

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CONCRETE WALL

	Source	High	Average	Low
Earthwork				
Clearing and grubbing	NHDOT	$ 2,700	$ 1,700	$ 1,000
Excavation/Dredging	NHDOT	$ 22,700	$ 12,100	$ 7,600
Remove and stockpile stone wall	RS Means	$ 3,900	$ 3,300	$ 2,600
Construct Stone Wall Facing	Prev. Proj.	$ 51,900	$ 37,000	$ 22,200
Loam/Seed	NHDOT	$ 1,700	$ 800	$ 400
Riprap	NHDOT	$ 15,600	$ 13,000	$ 10,400
Fill	NHDOT	$ 42,100	$ 29,400	$ 16,800
Fill Testing	Assumed	$ 15,000	$ 12,000	$ 9,000
General				
Mobilization/Demobilization	Prev. Proj.	$ 60,000	$ 40,000	$ 20,000
Field Office	NHDOT	$ 7,000	$ 6,300	$ 6,000
SWPPP, Erosion, Cofferdam	Wiswall Dam	$ 20,000	$ 15,000	$ 10,000
Concrete Structures				
Spillway	Prev. Proj.	$ 200,000	$ 135,000	$ 90,000
Retaining wall	Prev. Proj.	$ 450,000	$ 300,000	$ 200,000
Concrete Testing	Assumed	$ 10,000	$ 8,000	$ 6,000
Details				
Stoplogs and Pullers	Assumed	$ 5,000	$ 4,000	$ 3,000
Other details (staff gages, signs, etc.)	Assumed	$ 5,000	$ 4,000	$ 3,000
Fences	Assumed	$ 5,000	$ 4,000	$ 3,000
Construction Subtotal		$ 917,600	$ 625,600	$ 411,000
Contingency - Assume 20% of construction subtotal		$ 183,500	$ 125,100	$ 82,200
Engineering Design and Permitting		$ 128,800	$ 103,000	$ 77,300
Construction Engineering Administration		$ 93,800	$ 75,000	$ 56,300
Preliminary Estimate of Short-term Cash Outlay		$1,320,000	$ 930,000	$ 630,000

NOTE: Estimated costs are based on conceptual designs and are intended to provide order-of-magnitude costs for qualitative comparison of alternatives. Refer to SA's Report of Initial Study of Alternatives for limitations and further information. Short-term costs include design, permitting and construction, with a 20 percent contingency. Low, high and average costs estimated from low, high, and average unit costs for the concept components. Average costs shown are not the average of the high and low estimates.

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WIDEN CREST UPSTREAM; CUTOFF TRENCH

	Source	High	Average	Low
Earthwork				
Clearing and grubbing	NHDOT	$ 2,400	$ 1,500	$ 900
Excavation/Dredging	NHDOT	$ 9,800	$ 5,200	$ 3,300
Loam/Seed	NHDOT	$ 1,400	$ 700	$ 400
Riprap	NHDOT	$ 5,700	$ 4,800	$ 3,800
Fill	NHDOT	$ 25,800	$ 18,100	$ 10,300
Fill Testing	Assumed	$ 15,000	$ 12,000	$ 9,000
General				
Mobilization/Demobilization	Prev. Proj.	$ 60,000	$ 40,000	$ 20,000
Field Office	NHDOT	$ 4,700	$ 4,200	$ 4,000
SWPPP, Erosion, Cofferdam	Wiswall Dam	$ 20,000	$ 15,000	$ 10,000
Concrete Structures				
Spillway	Prev. Proj.	$ 200,000	$ 135,000	$ 90,000
Concrete Testing	Assumed	$ 5,000	$ 4,000	$ 3,000
Details				
Stoplogs and Pullers	Assumed	$ 5,000	$ 4,000	$ 3,000
Other details (staff gages, signs, etc.)	Assumed	$ 5,000	$ 4,000	$ 3,000
Fences	Assumed	$ 5,000	$ 4,000	$ 3,000
Construction Subtotal		$ 364,800	$ 252,500	$ 163,700
Contingency - Assume 20% of construction subtotal		$ 73,000	$ 50,500	$ 32,700
Engineering Design and Permitting		$ 118,800	$ 95,000	$ 71,300
Construction Engineering Administration		$ 62,500	$ 50,000	$ 37,500
Preliminary Estimate of Short-term Cash Outlay		$ 620,000	$ 450,000	$ 310,000

NOTE: Estimated costs are based on conceptual designs and are intended to provide order-of-magnitude costs for qualitative comparison of alternatives. Refer to SA's Report of Initial Study of Alternatives for limitations and further information. Short-term costs include design, permitting and construction, with a 20 percent contingency. Low, high and average costs estimated from low, high, and average unit costs for the concept components. Average costs shown are not the average of the high and low estimates.

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WIDEN CREST UPSTREAM; EXCAVATE AND REPLACE EMBANKMENT

	Source	High	Average	Low
Earthwork				
Clearing and grubbing	NHDOT	$ 3,100	$ 1,900	$ 1,200
Excavation/Dredging	NHDOT	$ 30,700	$ 16,400	$ 10,200
Loam/Seed	NHDOT	$ 1,900	$ 900	$ 500
Riprap	NHDOT	$ 5,700	$ 4,800	$ 3,800
Fill	NHDOT	$ 89,300	$ 62,500	$ 35,700
Fill Testing	Assumed	$ 15,000	$ 12,000	$ 9,000
General				
Mobilization/Demobilization	Prev. Proj.	$ 60,000	$ 40,000	$ 20,000
Field Office	NHDOT	$ 7,000	$ 6,300	$ 6,000
SWPPP, Erosion, Cofferdam	Wiswall Dam	$ 20,000	$ 15,000	$ 10,000
Concrete Structures				
Spillway	Prev. Proj.	$ 200,000	$ 135,000	$ 90,000
Concrete Testing	Assumed	$ 5,000	$ 4,000	$ 3,000
Details				
Stoplogs and Pullers	Assumed	$ 5,000	$ 4,000	$ 3,000
Other details (staff gages, signs, etc.)	Assumed	$ 5,000	$ 4,000	$ 3,000
Fences	Assumed	$ 5,000	$ 4,000	$ 3,000
Construction Subtotal		$ 452,700	$ 310,800	$ 198,400
Contingency - Assume 20% of construction subtotal		$ 90,500	$ 62,200	$ 39,700
Engineering Design and Permitting		$ 118,800	$ 95,000	$ 71,300
Construction Engineering Administration		$ 93,800	$ 75,000	$ 56,300
Preliminary Estimate of Short-term Cash Outlay		$ 760,000	$ 540,000	$ 370,000

NOTE: Estimated costs are based on conceptual designs and are intended to provide order-of-magnitude costs for qualitative comparison of alternatives. Refer to SA's Report of Initial Study of Alternatives for limitations and further information. Short-term costs include design, permitting and construction, with a 20 percent contingency. Low, high and average costs estimated from low, high, and average unit costs for the concept components. Average costs shown are not the average of the high and low estimates.

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WIDEN CREST UPSTREAM; UPSTREAM BLANKET

	Source	High	Average	Low
Earthwork				
Clearing and grubbing	NHDOT	$ 4,100	$ 2,600	$ 1,500
Excavation/Dredging	NHDOT	$ 16,400	$ 8,800	$ 5,500
Loam/Seed	NHDOT	$ 2,500	$ 1,200	$ 600
Riprap	NHDOT	$ 5,700	$ 4,800	$ 3,800
Fill	NHDOT	$ 45,800	$ 32,100	$ 18,300
Fill Testing	Assumed	$ 15,000	$ 12,000	$ 9,000
General				
Mobilization/Demobilization	Prev. Proj.	$ 60,000	$ 40,000	$ 20,000
Field Office	NHDOT	$ 4,700	$ 4,200	$ 4,000
SWPPP, Erosion, Cofferdam	Wiswall Dam	$ 20,000	$ 15,000	$ 10,000
Concrete Structures				
Spillway	Prev. Proj.	$ 200,000	$ 135,000	$ 90,000
Concrete Testing	Assumed	$ 5,000	$ 4,000	$ 3,000
Details				
Stoplogs and Pullers	Assumed	$ 5,000	$ 4,000	$ 3,000
Other details (staff gages, signs, etc.)	Assumed	$ 5,000	$ 4,000	$ 3,000
Fences	Assumed	$ 5,000	$ 4,000	$ 3,000
Construction Subtotal		$ 394,200	$ 271,700	$ 174,700
Contingency - Assume 20% of construction subtotal		$ 78,800	$ 54,300	$ 34,900
Engineering Design and Permitting		$ 118,800	$ 95,000	$ 71,300
Construction Engineering Administration		$ 62,500	$ 50,000	$ 37,500
Preliminary Estimate of Short-term Cash Outlay		$ 650,000	$ 470,000	$ 320,000

NOTE: Estimated costs are based on conceptual designs and are intended to provide order-of-magnitude costs for qualitative comparison of alternatives. Refer to SA's Report of Initial Study of Alternatives for limitations and further information. Short-term costs include design, permitting and construction, with a 20 percent contingency. Low, high and average costs estimated from low, high, and average unit costs for the concept components. Average costs shown are not the average of the high and low estimates.

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DECOMMISSIONING

	Source	High	Average	Low
Earthwork				
Grubbing	NHDOT	$ 1,100	$ 700	$ 400
Excavation/Dredging	NHDOT	$ 45,000	$ 24,000	$ 15,000
Construct/Reconstruct Stone Wall	Prev. Proj.	$ 25,800	$ 15,500	$ 10,300
Loam/Seed	NHDOT	$ 700	$ 300	$ 200
Riprap/Revetment	NHDOT	$ 16,000	$ 13,300	$ 10,600
General				
Mobilization/Demobilization	Prev. Proj.	$ 60,000	$ 40,000	$ 20,000
Field Office	NHDOT	$ 4,700	$ 4,200	$ 4,000
SWPPP, Erosion, Cofferdam	Wiswall Dam	$ 20,000	$ 15,000	$ 10,000
Construction Subtotal		$ 173,300	$ 113,000	$ 70,500
Contingency - Assume 20% of construction subtotal		$ 34,700	$ 22,600	$ 14,100
Engineering Design and Permitting		$ 142,600	$ 124,000	$ 105,400
Construction Engineering Administration		$ 46,000	$ 40,000	$ 34,000
Preliminary Estimate of Short-term Cash Outlay		$ 400,000	$ 300,000	$ 220,000

NOTE: Estimated costs are based on conceptual designs and are intended to provide order-of-magnitude costs for qualitative comparison of alternatives. Refer to SA's Report of Initial Study of Alternatives for limitations and further information. Short-term costs include design, permitting and construction, with a 20 percent contingency. Low, high and average costs estimated from low, high, and average unit costs for the concept components. Average costs shown are not the average of the high and low estimates.

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Original Work:
By: NAO Date: 10/11/2013 Subject: **Initial Study of Alternatives**
Checked By: JET Date: 10/11/2013 **Table 2 - Short Term Cash Outlay Breakdown**

DECOMMISSIONING ALTERNATE

Earthwork	Source	High	Average	Low
Grubbing	NHDOT	$ 2,200	$ 1,400	$ 800
Excavation/Dredging	NHDOT	$ 52,500	$ 28,000	$ 17,500
Rock Excavation	NHDOT	$ 57,500	$ 37,500	$ 20,000
Loam/Seed	NHDOT	$ 1,300	$ 700	$ 300
Riprap/Revetment	NHDOT	$ 21,500	$ 17,900	$ 14,400
General				
Mobilization/Demobilization	Prev. Proj.	$ 60,000	$ 40,000	$ 20,000
Field Office	NHDOT	$ 4,700	$ 4,200	$ 4,000
SWPPP, Erosion, Cofferdam	Prev. Proj.	$ 20,000	$ 15,000	$ 10,000
Construction Subtotal		$ 219,700	$ 144,700	$ 87,000
Contingency - Assume 20% of construction subtotal		$ 43,900	$ 28,900	$ 17,400
Purchase and Demolish 490 High Street		$ 440,000	$ 400,000	$ 360,000
Engineering Design and Permitting		$ 157,600	$ 137,000	$ 116,500
Construction Engineering Administration		$ 46,000	$ 40,000	$ 34,000
Preliminary Estimate of Short-term Cash Outlay		$ 910,000	$ 750,000	$ 610,000

NOTE: Estimated costs are based on conceptual designs and are intended to provide order-of-magnitude costs for qualitative comparison of alternatives. Refer to SA's Report of Initial Study of Alternatives for limitations and further information. Short-term costs include design, permitting and construction, with a 20 percent contingency. Low, high and average costs estimated from low, high, and average unit costs for the concept components. Average costs shown are not the average of the high and low estimates.

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APPENDIX A

DAM INSPECTION

DAM INSPECTION CHECKLIST

Name of Dam:	Old Mill Pond Dam	NHDES I.D. No.:	105.03
		Army Corp I.D.:	N/A
Location:	Hampton (Town)	Rockingham (County)	
NHDES Classification Data:	N/A (Size)	Significant (Hazard)	

PHYSICAL DATA:	Retained Earth Embankment (Type of Dam)	11.2 ft. (Height of Dam)	17 acre-ft. (per NHDES Data Sheet 9/4/12) (Normal Pool Storage Capacity)
ELEVATIONS: (NGVD 1929)	Uncertain, >15 ft. (Normal Pool)	15.0 ft. (spillway approach channel) 16.4 ft. (impoundment upstream of beaver dam) (Pool at Inspection)	~8.0 ft. (under Mill) (Tailwater at Inspection)

Name	Title/Position	Representing
Robert Stephens, PE	Prinicpal Engineer	Stephens Associates Consulting Engineers, LLC
James Turner	Project Manager	

DATE OF INSPECTION: 6/6/2013

WEATHER: Overcast TEMPERATURE: ~65 degrees F

This is to certify that the above dam has been inspected and the following are the results of this inspection.

SIGNATURE OF INSPECTING ENGINEER

Stephens Associates Consulting Engineers
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www.stephensengineers.com 60 Northrup Dr., Brentwood, NH 03833; Phone 603-772-1417

Name of Dam: Old Mill Pond Dam I.D. No.: 105.03 Inspection Date: 6/6/2013

AREA INSPECTED	ITEM NO.	CONDITION	OBSERVATIONS	CHECK ( ) ACTION NEEDED: MONITOR	EVALUATE	REPAIR
RIGHT EMBANKMENT 1 of 1						
CREST	1	Surface Cracking	None noted	X		
	2	Sinkhole, Animal Burrow	None noted but signs of erosion on crest behind wall filled with grout	X		
	3	Low Area(s)	Uneven crest elevation (Photos 1 and 2)	X		
	4	Horizontal Alignment	Widest at spillway, narrows toward abutment/ right end	X		
	5	Ruts and/or Puddles	None noted	X		
	6	Vegetation Condition	Recently cut; many stumps with large roots; tree roots visible in many locations			X
	7	Miscellaneous	Sta. 60.5: 4" square granite bound, 10'-2" upstream of wall downstream face			
	8	Miscellaneous	Sta. 48: Survey stake			
UPSTREAM SLOPE	9	Slide, Slough, Scarp	None noted	X		
	10	Slope Protection	Rip-rap with significant soil/vegetation infill (Photo 2)	X		
	11	Sinkhole, Animal Burrow	None noted	X		
	12	Emb.-Abut. Contact	Gradual	X		
	13	Erosion	Erosion of soil infill around rip-rap	X		
	14	Vegetation Condition	Recently cut; many stumps; two trees within 15 ft. near right end			X
	15					
	16					

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

Sta. 0 is intersection of fight downstream wall with spillway.
Right embankment 107 ft. long, end of dam is about even with edge of overhang of porch closest to mill on right abutter's house.

6., 14. Refer to Sheet 7, Table 1

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Name of Dam: Old Mill Pond Dam I.D. No.: 105.03 Inspection Date: 6/6/2013

AREA INSPECTED	LEFT EMBANKMENT 1 of 1			CHECK ( ) ACTION NEEDED		
	ITEM NO.	CONDITION	OBSERVATIONS	MONITOR	EVALUATE	REPAIR
CREST	17	Surface Cracking	None noted	X		
	18	Sinkhole, Animal Burrow	Sta. 140 - surface erosion/sinkhole; (continued below)			X
	19	Low Area(s)	Frequent; Sta 113 downstream of stump; uneven crest (Photos 4 and 5)	X		
	20	Horizontal Alignment	Varying width and elevation	X		
	21	Ruts and/or Puddles	None noted	X		
	22	Vegetation Condition	Recently cut; many stumps with large roots; big tree at end needs to be cut (within 15 ft.); tree roots visible in many locations; frequent poison ivy			X
	23					
	24					
UPSTREAM SLOPE	25	Slide, Slough, Scarp	None noted	X		
	26	Slope Protection	Rip-rap with soil/vegetation infill between main and auxiliary spillway (Photo 8)	X		
	27	Sinkhole, Animal Burrow	Low areas and holes around nested boulders (not likely animal burrows);	X		
	28					
	29	Emb.-Abut. Contact	Gradual	X		
	30	Erosion	Sta. 49 to 51 - large erosion at downstream wall/wall partial failutre			X
	31	Vegetation Condition	Recently cut; many stumps, refer to Sheet 7, Table 1			X
	32	Miscellaneous	Upstream at junction with main spillway - dumped yard waste and miscellaneous fill.			

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

Station is along downstream wall (curved), Sta. 0 is intersection of wall with spillway.
Left embankment end at Sta. 165 at large tree ~30 in. diameter/telephone pole.

18. Sta 121 - sinkhole just upstream of wall (typ. behind wall of soil erosion through stone masonry). Sta 90 Animal burrow or erosion hole at water line of upstream slope ~18 in. deep (horiz.); just left of large stump spongy area at base of stump upstream (Photo 6); Sta. 20 - hole ~2 ft. upstream of wall.
22. Refer to Sheet 7, Table 1
30. Upstream erosion channel to aluminum pipes, pipes mostly buried

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Name of Dam: Old Mill Pond Dam I.D. No.: 105.03 Inspection Date: 6/6/2013

LEFT AND RIGHT EMBANKMENT DOWNSTREAM FACES

1 of 1

AREA INSPECTED	ITEM NO.	CONDITION	OBSERVATIONS	CHECK ( ) ACTION NEEDED: MONITOR	EVALUATE	REPAIR
RIGHT DOWNSTREAM FACE	33	Wet Area(s) (No Flow)	See Downstream Area sheet		X	
	34	Seepage	See Downstream Area sheet		X	
	35	Slide, Slough, Scarp	None noted	X		
	36	Emb.-Abut. Contact	Gradual; Sta. 108 natural grade slopes gently	X		
	37	Sinkhole, Animal Burrow	Animal burrow at STA. 52 at base of wall. Groundhog (or similar) observed.			X
	38	Erosion	Significant erosion near mill building; portions of wall near mill appear missing.		X	
	39	Unusual Movement	Wall alignment shows signs of much movement/misalignment (Photo 3)	X		
	40	Vegetation Control	Landscaping obscures much of wall; one tree within 15 ft. near right end, one about			X
	41		15.5 ft.; ~2" diameter tree roots at ground surface extending through stone masonry			
	42		wall just right of Mill building;			
LEFT DOWNSTREAM FACE	43	Wet Area(s) (No Flow)	Sta. 112 (see Downstream Area sheet)		X	
	44	Seepage	Sta. 112 (see Downstream Area sheet)		X	
	45	Slide, Slough, Scarp	None noted	X		
	46	Emb.-Abut. Contact	Gradual to driveway	X		
	47	Sinkhole, Animal Burrow	Animal burrows at Sta. 49 (~30" deep, also wall failure); Sta. 55 (~32" deep)			X
	48	Erosion	Sta. 49 at wall failure			X
	49	Unusual Movement	Significant movement of stone masonry	X		
	50	Vegetation Control	Recently cut stumps remain at base of wall, refer to Table 1, Sheet 7			X
	51					

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

37. Right abutter states she recently observed 2 to 3 groundhogs/woodchucks near dam and is concerned about burrows on dam. Claims previous burrows had flow through them (presumably since repaired).
39. Right abutter states that right downstream wall used to be perfectly straight, but roots of trees have disrupted wall. Also, in 2007 the gound was very wet downstream of the right embankment.
47. Chipmunks observed in vicinity of left embankment.

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Name of Dam: Old Mill Pond Dam I.D. No.: 105.03 Inspection Date: 6/6/2013

DOWNSTREAM AREA AND MISC.

1 of 1

AREA INSPECTED	ITEM NO.	CONDITION	OBSERVATIONS	CHECK ( ) ACTION NEEDED: MONITOR	EVALUATE	REPAIR
DOWNSTREAM AREA	52	Abutment Leakage	None noted (left and right)	X		
	53	Foundation Seepage	See below.		X	
	54	Slide, Slough, Scarp	None noted (left and right)	X		
	55	Drainage System	None noted (left and right)	X		
	56					
	57					
	58	Downstream Hazard Description	Residence immediately downstream of left embankment wall; Mill building; Route 27.		X	
	59	Date of Last Update of Emergency Plan	N/A			X
MISCELLANEOUS	60	Reservoir Slopes	Shallow to near flat	X		
	61	Access Roads	Near Route 27; easy access by foot.	X		
	62	Security Devices	None	X		
	63		Right abutter Candace Spellmach (603-926-5082) has compilation of history of dam and other documents; says main house has basement, back addition has crawlspace; says whole pond ~2 ft. deep, and ~5 ft. deep near left embankment auxiliary spillway.			
	64					
	65					
	66					

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

53. Right embankment - Areas partially obscured by gardens;
- Two wet areas on right side at higher elevation than stream channel: Ponded water ~10 ft. downstream of stone wall (Photo 3); Large wetland type wet area ~25 to 50 ft. downstream of wall and ~20 to 30 ft. right of channel (could be high bedrock and wet from runoff) (Photo 15);
- Sta. 35: surficial shallow erosion channels on ground surface downstream of wall; grass covered

Left embankment: Sta. 112 (downstream of large stump on crest): standing water ~3 ft. downstream of wall (~3 to 8 ft. wide, ~10 ft. long) (Photo 7). Right Abutter states that this area used to be a "frog pond" before it was filled.

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Name of Dam: Old Mill Pond Dam I.D. No.: 105.03 Inspection Date: 6/6/2013

AREA INSPECTED	ITEM NO.	CONDITION	OBSERVATIONS	CHECK ( ) ACTION NEEDED: MONITOR	EVALUATE	REPAIR
SPILLWAYS 1 of 1						
ERODIBLE CHANNEL	67	Slide, Slough, Scarp	None noted in channel. (continued below)			X
	68	Erosion	Channel is boulders and possibly bedrock. Channel erosion not noted. (cont'd)			X
	69	Vegetation Condition	Weeds in approach	X		
	70	Debris	None noted	X		
	71	Discharge Area	Under mill - vertical drop ~2 to 3 ft. stacked stone masonry; slight evidence of seepage at left corner (silt trail) of stone masonry near bottom of drop	X		
	72					
	73	Upstream Area	Former ring of fill/boulders upstream of spillway no longer present. ~20 ft. upstream, ~100-ft.-long beaver dam retains impoundment water ~1.4 ft. higher than spillway approach area (Photo 16)	X		
	74					
	75					
AUXILIARY SPILLWAY	76	Description/Condition	Concrete spillway foundation Sta. 66.5 to 88, fair condition (Photos 12 and 13)	X		
	77	Erosion	Erosion signs especially on downstream lip (spalling) - possible surface layer ~1" thick. Rounded to subrounded aggregate	X		
	78					
	79	Cracking	Vertical cold joints in weir, no significant cracks noted.	X		
	80	Approach Area	Vegetated soil/embankment from impoundment to spillway	X		
	81	Weir or Control	Concrete weir Sta. 73 to 83.			
	82	Discharge Area	Discharges to grassy area without channel; residence ~9 ft. downstream		X	
PIPE OUTLETS	83	Approach Area	Erosion channel on embankment leading to pipes	X		
	84	Pipes	(2) ~43-in.-long aluminum pipes (12" and 5.75" ID), mostly buried, ~40% open	X		
	85	Discharge Area	Stones at wall bottom for outfall	X		

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

67/68: Photos 2, 8 through 11; Side slopes (ends of L and R embankments) appear eroded back significantly. Ends of embankment at spillway may have been formerly retained by stone masonry. Right embankment more sloping/eroded than left at junction with spillway. No erosion protection.

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TABLE 1 - STUMPS ON EMBANKMENT

Sta. (ft.)	Distance upstream from downstream face of downstream wall (ft.)	Diameter (in.)
Right Embankment (Sta. 0 is intersection of wall with spillway)		
15	13.5	28
24	16	16
27	6.5	10
28	8	4
33	8	4
35	8.5	10
44	12	9, 15
48	12	14
64	9	20
67	6.5	30
69	9	16
Left Embankment (Sta. 0 is intersection of wall with spillway)		
10	5	18
15	5.5	4
14	15	18
26	5	6
46	13	live bush/stump
48	17	dead bush/stump
68	10.5	30
86	11	18
103	9.5	36
105	7	dead bush/stump
113	8.5	22
134	14	18
135	6	6
139	11	12
Stumps Downstream of left embankment		
117	2	7
147	3.5	7
153	6	4
159	5	4

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Project: Number: 111-12-002 Sheet 1 of 9
Name: Old Mill Pond Dam, NHDES No. 105.03
Hampton, NH

Original Work:
By: J. Turner Date: June 13, 2013 Subject: **Representative Photographs**
Checked By: NAO Date: June 13, 2013

Photo Number: 1	
Description:	Right embankment viewed from right end

Photo Date: June 6, 2013

Photo Number: 2	
Description:	Right embankment and spillway viewed from left embankment

Photo Date: June 6, 2013

Revisions:
By: Date:
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Project: Number: 111-12-002 Sheet 2 of 9
Name: Old Mill Pond Dam, NHDES No. 105.03
Hampton, NH
Subject: **Photographs**

Original Work:
By: J. Turner Date: June 13, 2013
Checked By: NAO Date: June 13, 2013

Photo Number:	**3**	Downstream face of right embankment showing uneven downstream face, downstream vegetation/garden, and ponded water
	Description:	

Photo Date: June 6, 2013

Revisions:
By: Date:
By: Date:

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Original Work:
By: J. Turner Date: June 13, 2013 Subject: **Representative Photographs**
Checked By: NAO Date: June 13, 2013

Photo Number: 4	Left embankment viewed from near left end
Description:	

Photo Date: June 6, 2013

Photo Number: 5	Left embankment and Spillway
Description:	

Photo Date: June 6, 2013

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Original Work:
By: J. Turner Date: June 13, 2013 Subject: **Representative Photographs**
Checked By: NAO Date: June 13, 2013

Photo Number: 6	Spongy area and horizontal erosion hole on upstream slope left of auxiliary spillway, just left of stump
Description:	

Photo Date: June 6, 2013

Photo Number: 7	Wet area downstream of left embankment
Description:	

Photo Date: June 6, 2013

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Original Work:
By: J. Turner Date: June 13, 2013 Subject: **Representative Photographs**
Checked By: NAO Date: June 13, 2013

Photo Number: 8	Spillway and right end of left embankment
Description:	

Photo Date: June 6, 2013

Photo Number: 9	Spillway and right end of left embankment
Description:	

Photo Date: June 6, 2013

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Original Work:
By: J. Turner Date: June 13, 2013 Subject: **Representative Photographs**
Checked By: NAO Date: June 13, 2013

Photo Number: 10	Downstream side of mill building and spillway channel
Description:	

Photo Date: May 1, 2012 (note photo taken prior to inspection)

Photo Number: 11	Spillway channel under mill looking left and right
Description:	

Photo Date: June 6, 2013

Revisions:
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By: Date:

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Original Work:
By: J. Turner Date: June 13, 2013 Subject: **Representative Photographs**
Checked By: NAO Date: June 13, 2013

Photo Number: 12	Auxiliary Spillway
Description:	

Photo Date: June 6, 2013

Photo Number: 13	Auxiliary Spillway
Description:	

Photo Date: June 6, 2013

Revisions:
By: Date:
By: Date:

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Original Work:
By: J. Turner Date: June 13, 2013 Subject: **Representative Photographs**
Checked By: NAO Date: June 13, 2013

Photo Number: 14	Downstream area viewed from right side of mill
Description:	

Photo Date: June 6, 2013

Photo Number: 15	Downstream area right of channel showing wet areas
Description:	

Photo Date: May 1, 2012 (note photo taken prior to inspection)

Revisions:
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By: Date:

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Original Work:
By: J. Turner Date: June 13, 2013
Checked By: NAO Date: June 13, 2013

Photo Number:	**16**
Description:	Impoundment, spillway approach, and beaver dam viewed from left side of spillway

Photo Date: June 6, 2013

Revisions:
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By: Date:

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APPENDIX B

HYDROLOGIC AND HYDRAULIC EVALUATION

Original Work:
By: NAO Date: August 6, 2013 Subject: **Appendix B - Hydrologic and Hydraulic Evaluation**
Checked By: JET Date: August 9, 2013

Objective: Estimate flow and impoundment elevation for Spillway Design Flood, the 100-year Flood (Q_{100})

Methodology: Use SCS TR-20 as implemented by HydroCAD v.10.00 software

References:

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- Cartographic Assoc. Inc. (1996) "Property Maps, Hampton, New Hampshire," Map Number 132, digitized from original map by G & Linderwood Engineers, Inc.
- Richard P. Millette and Associates (1986) "Plan of Land for William H. & Ruth H. Barkley, North Shore Road, County of Rockingham, Hampton, N.H., September 1986," provided to SA by Candace Stellmach in June 2013.
- SCS (1986), Technical Release Number 55 (TR-55), revised 1986, as cited in HydroCAD® Stormwater Modeling System, Version 10 Owners Manual, HydroCAD Software Solutions LLC 1986-2013.

Results:

	Spillway Design Flood (Q_{100}): 9.1 in. rainfall				50-Year Flood (Q_{50}): 7.6 in. rainfall			
Dam:	Peak Inflow	=	232	cfs	Peak Inflow	=	184	cfs
	Peak Outflow	=	157	cfs	Peak Outflow	=	107	cfs
	Peak El.	=	17.6	ft.	Peak El.	=	17.1	ft.
Culvert:	Peak El.	=	11.8	ft.	Peak El.	=	11.6	ft.

Table of Contents:

Attached: Representative HydroCAD output

Revisions:
By: NAO/JET Date: 9/26/2013
By: Date:

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Original Work:
By: NAO Date: August 6, 2013 Subject: Appendix B - Hydrologic and Hydraulic Evaluation
Checked By: JET Date: August 9, 2013

A. MODEL DRAINAGE

Use LiDAR data in AutoCAD Civil 3D 2011 to manually delineate drainage areas.
Model drainage area as 3 sub areas:

1. Direct drainage to Old Mill Pond downstream of North Shore Road — 3773570 square ft. = 87 ac
2. Drainage to Smith Wetland wetland between North Shore Road and Woodland Road — 5800307 square ft. = 133 ac
3. Drainage to Ice Pond upstream of Woodland Road — 16065865 square ft. = 369 ac

Total area = 25639742 square ft. = 589 acres = 0.920 square mi.

Estimate Time of Concentration for subdrainages using the Lag/Curve Number method:

		Ice Pond subdrainage	Smith Wetland subdraina	Direct drainage to OMP
Average Slope	ft./ft.	0.0456	0.0492	0.0497
Flow Length	ft.	7913	3149	2814
Tc	min	104	34	37

Slopes and flow length estimated using LiDAR data and AutoCAD Civil 3D.
Tc calculated by HydroCAD and adjusted during calibration of Ice Pond subdrainage to account for water stored by wetlands.

Estimate curve numbers for subdrainages

Use Antecedent Moisture Condition (AMC) = 2, per Regulations.
Use USDA NRCS Web Soil Survey data, with individual AOIs for each subdrainage.
Areas of Interest (AOIs) delineated using shapefiles exported from Civil 3D.
Group map units based on similar hydrologic characteristics and Hydrologic Soil Group, select Curve Numbers using HydroCAD Owner's Manual, Appendix A2 and engineering judgment.
Table of subdrainages shown on following sheet.

B. PRECIPITATION DATA

Obtain precipitation predictions from Northeast Regional Climate Center (precip.net), which provides predictions of precipitation intensity (in inches) and distribution (of rainfall over duration of storm) for varying return periods and varying storm durations. Use HydoCAD tool for converting precipitation intensity to site-specific storm distribution. Select point for precipitation prediction roughly in center of drainage area.

50-year, 24-hour rainfall = 7.6 in.
100-year, 24-hour rainfall = 9.1 in.

50- and 100-year, 24 hour site-specific rainfall estimates obtained by SA from NRCC on July 11, 2013

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Table of subdrainages

Direct drainage to Old Mill Pond downstream of North Shore Road

Map Unit Symbol	Map Unit Name	Acres in AOI	HSG	SA Notes	Curve Number	Sum Area of Similar Map Units
43B	Canton gravelly fine sandy loam, 3 to 8 percent slopes, very stony	5.9	B	Residential, 1 acre, B	68	5.90
140B	Chatfield-Hollis-Canton complex, 3 to 8 percent slopes, very stony	42.7	B/D/B	Residential, 1 acre, 1/3 range B to D	73	42.70
495	Ossipee mucky peat	14.9	D	Use woods/grass, fair, D	82	14.9
W	Water	5.2	N/A	Pond/Water	98	5.2
538A	Squamscott fine sandy loam, 0 to 5 percent slopes	10.00	C	Woods	73	10.00
547A	Walpole very fine sandy loam, 0 to 3 percent slopes, very stony	8	C	Woods	73	8
547B	Walpole very fine sandy loam, 3 to 8 percent slopes, very stony	0	C	N/A	N/A	N/A

Drainage to Smith Wetland between North Shore Road and Woodland Road

Map Unit Symbol	Map Unit Name	Acres in AOI	HSG	SA Notes	Curve Number	Sum Area of Similar Map Units
140B	Chatfield-Hollis-Canton complex, 3 to 8 percent slopes, very stony	60.6	B/D/B	Residential, half ac	75	61.8
447A	Scituate-Newfields complex, 0 to 3 percent slopes, very stony	1.2	C/B	use halfway beween B/C		
495	Ossipee mucky peat	34.9	D	Use woods/grass, fair, D	82	16
	Water				98	34.9
538A	Squamscott fine sandy loam, 0 to 5 percent slopes	5.40	C	Woods	73	5.40
547B	Walpole very fine sandy loam, 3 to 8 percent slopes, very stony	15.1	C	Residential, little development	77	15.1

Drainage to Ice Pond upstream of Woodland Road

Map Unit Symbol	Map Unit Name	Acres in AOI	HSG	SA Notes	Curve Number	Sum Area of Similar Map Units
42B	Canton gravelly fine sandy loam, 3 to 8 percent slopes	2	B	Residential, half ac	70	48.6
43B	Canton gravelly fine sandy loam, 3 to 8 percent slopes, very stony	46.6	B	use B		
447A	Scituate-Newfields complex, 0 to 3 percent slopes, very stony	14	C/B	Mostly residential	75	28.2
447B	Scituate-Newfields complex, 3 to 8 percent slopes, very stony	14.2	C/B	assume half ac, use halfway between B/C		
140B	Chatfield-Hollis-Canton complex, 3 to 8 percent slopes, very stony	158.3	B/D/B	Mostly woods.	60	168.5
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, very stony	10.2	B/D/B	use 1/3 range from B to D, assume good (modifed from fair		
295	Greenwood mucky peat	25	D	Pond/Water	98	25
125	Scarboro muck, very stony	4	D	Use woods/grass	82	52.5
495	Ossipee mucky peat	48.5	D	fair, D		
547A	Walpole very fine sandy loam, 0 to 3 percent slopes, very stony	45.1	C	Wetlands	76	46
547B	Walpole very fine sandy loam, 3 to 8 percent slopes, very stony	0.9	C	Use woods/grass, fair, C		

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C. MODELING OF RIVERS AND PONDS:

1. Wetland upstream of Ice Pond modeled as pond, discharging to Ice Pond
2. Ice Pond modeled as pond, discharging through Ice Pond Dam and Woodland Rd. Culvert to Smith Wetland
3. Smith Wetland between North Shore Road and Woodland Road modeled as pond, discharging to Nilus Brook
4. Nilus Brook from Smith Wetland to Old Mill Pond modeled as reach.
   Disregard culvert at North Shore Road (assume negligible storage)
5. Old Mill Pond modeled as pond. Main Spillway discharges to area between Dam and Mill building, embankment and auxiliary spillway discharge to area between Dam and High Street.
6. Area between Dam and Mill building modeled as detention basin (no storage)
7. Area between Mill building and High Street modeled as pond, controlled by High Street culvert.
8. Downstream boundary condition (Meadow Pond) modeled as link. 100-yr elevation = 9 ft. (FEMA Zone AE)

1. Wetland upstream of Ice Pond

Storage

Elevation, ft.	Area, ft^2	Area, acres	Source
38	0	0.0	assume based on aerial photographs and engineering judgment
40	2000000	45.9	assume based on LiDAR and engineering judgment
41	2751000	63.2	LiDAR
42	2952000	67.8	LiDAR
43	3088000	70.9	LiDAR
44	3220000	73.9	LiDAR
45	3381000	77.6	LiDAR

Outlets

Wetland in model discharges to Ice Pond

Model outlet as asymmetric weir based on ground surface profile from Civil 3D and an estimated channel

Offset, ft.	El., ft.	Height, ft. (above El. 35)	
2250	45	10	
2500	40	5	
2550	40	5	channel between offset 2550 - 2566 assumed based on Nilus Bk.
2552	39	4	geometry observed in vicinity of Woodland Rd and North Shore Rd
2558	38.5	3.5	
2564	39	4	
2566	40	5	
2600	40	5	
2700	45	10	

Assume weir discharge coefficient 2.6

Assume no tailwater.

Assume starting pond El. 38.7 ft., automatic base flow (0.5 cfs) calculated by HydroCAD

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2. Ice Pond

Storage

Elevation, ft.	Area, ft^2	Area, acres	Source
27	0	0.0	El. pond bottom near dam from Ice Pond Dam Ex. Cond. Plan
30	389000	8.9	LiDAR
31	546000	12.5	LiDAR
32	632000	14.5	LiDAR
33	724000	16.6	LiDAR
34	838000	19.2	LiDAR (used engineering judgment to estimate d/s limit of pond)
35	970000	22.3	LiDAR (used engineering judgment to estimate d/s limit of pond)

Outlets

Model as Broad-crested weirs, except model culvert beneath Woodland Rd. as culvert:

	Inv. El., ft.	Length, ft	Breadth, ft	Source
Dam consists of:				
Stone spillway	29.85	3.5	2.5	Ice Pond Dam Ex. Cond. Plan shows spillway invert El. 28.2 and pond El. ~30. Modify spillway to 29.85 to set pond El. at proper base flow
Auxiliary spillway	31.2	22	15	Ice Pond Dam Ex. Cond. Plan
Top of dam	31.3	25	2.5	Ice Pond Dam Ex. Cond. Plan
These outlets discharge to:				
Pipe culvert	25.85 (u/s) 26.2 (d/s)	50	Dia. = 50"	Ice Pond Dam Ex. Cond. Plan (d/s end of pipe) from photo, pipe plastic, smooth (n = 0.013) entrance square edge, use Ke = 0.5
Woodland Road	33.8	260	50	Ice Pond Dam Ex. Cond. Plan (road centerline)

Assume starting El. 30 ft., automatic base flow of 0.5 cfs calculated by HydroCAD

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3. Smith Wetland between North Shore Road and Woodland Road

Storage

Elevation, ft.	Area, ft^2	Area, acres	Source
21	0	0.0	LiDAR (low area near exit of pond)
24	2341000	53.7	LiDAR
25	2568000	59.0	LiDAR
26	2761000	63.4	LiDAR
27	2950000	67.7	LiDAR

Outlets

Wetland discharges to stream channel, approx. "invert" El. 21 ft. (assumed, based on pond bottom El.)
Model outlet as asymmetric weir based on ground surface profile from Civil 3D and an estimated channel

Offset, ft.	El., ft.	Height, ft. (above "invert" El. 21)	
0	32	11	
100	29	8	
170	26	5	
215	27	6	
250	25	4	
360	23	2	stream channel between offset 360 - 376 estimated based on
362	22.7	1.7	channel dimensions observed at upstream side of N. Shore Rd.
368	22.5	1.5	(~1000 ft. downstream of outlet)
374	22.7	1.7	
376	23	2	
420	25.5	4.5	
460	24.5	3.5	
610	30	9	
665	29	8	
730	32	11	

Assume weir discharge coefficient 2.6
Assume starting pond El. 22.6 ft., automatic base flow (0.7 cfs) calculated by HydroCAD

4. Stream from Smith Wetland to Old Mill Pond

Model as reach.
Disregard culvert at North Shore Road (assume negligible storage)
Use channel dimensions on upstream and downstream sides of North Shore Road (~1,000 ft. downstream of Smith Wetland outlet, ~1,300 ft. upstream of Old Mill Pond inlet) as basis for model stream cross-section. Channel dimensions from Hampton Tax Map 132 and Barkley Survey Plan (1986)

Model stream cross-section:

Offset, ft.	El., ft.	Manning's n	Source
0	26	(not used)	LiDAR
100	22	0.100	LiDAR
130	19	0.100	LiDAR
152	18	0.070	Channel width est ~16 ft., assume El.18 ft.
160	17.4	0.040	Channel invert El. from SA survey at u/s side of culvert
168	18	0.040	See above (channel)
185	19	0.070	LiDAR
200	20.5	0.100	LiDAR
225	21	0.100	LiDAR
240	23	0.100	LiDAR
270	24	0.100	LiDAR
350	26	0.100	LiDAR

Manning's n-values selected using HydroCAD definitions

Location	n	
Overbanks	0.1	Heavy timber, flow beneath branches
Top of Bank	0.07	Medium dense brush, winter
Channel	0.04	Natural stream (winding stream, pools & shoals)

Estimate Length = 2200 ft. (LiDAR) to 2400 ft. (Google Earth aerial photo). Use 2300 ft.

Modeled profile:		
Inlet Invert (ft.)	21	Assumed based on invert at wetland outlet
Outlet Invert (ft.)	14.3	from SA survey at upstream end of impoundment
Slope (ft./ft/)	0.0033	Calculated by HydroCAD

Assume base flow 0.7 cfs.

5. Old Mill Pond

Storage

Elevation, ft.	Area, ft^2	Area, acres	Source
12.4	0	0.0	SA survey (low point of surveyed pond bathymetry)
15	14800	0.3	2011 Aerial Photograph on NH GranitView (assume El. 15 ft.)
16.5	110000	2.5	2010/2011 Aerial Photo on NH GranitView (assume El. 16.5 ft.)
17	568000	13.0	LiDAR
18	1036000	23.8	LiDAR
19	1204000	27.6	LiDAR
20	1376000	31.6	LiDAR

Outlets

Model spillway as asymmetric weir, Cd = 2.6
Model auxiliary spillway as broad-crested weir: invert = 17.8 ft. (SA survey), width = 9.1 ft., breadth ~1 ft.
Model portions of embankment as asymmetric weirs, Cd = 2.6.
Disregard beaver dam upstream of spillway.

Spillway

Offset, ft.	El., ft.
90.0	18.5
96.9	16.7
100.5	14.7
107.7	14.8
117.4	18.2
117.5	18.5

Right embankment

Offset, ft.	El., ft.
0	20.3
7.4	19.1
26.4	19.1
50.7	18.6
73.7	18.5
90	18.5
90.1	20.3

Left embankment

Offset, ft.	El., ft.	REVISED Offset (Subtracted 9.1 ft of aux. outlet)
117.3	19.2	
117.4	18.2	
137	18.1	
156.8	18.1	
177.3	18.1	168.2
202.1	18.5	193
221.5	18.6	212.4
239.4	18.8	230.3
269.5	19.2	260.4

Other

Starting El. 14.88 ft. (for consistency with spillway elevation. Base flow of 0.9 cfs calculated by HydroCAD.

6. Mill Building

Model as detention basin (insignificant storage).

Outlets

Model discharge beneath mill as Orifice: width 7.4 ft. (88.8 in.), bot. El. 11.5 ft., height 2.5 ft. (30 in.), Cd = 0.6

Model flow left and right of mill as asymmetric weirs, Cd = 2.6.

Left of mill building			Right of mill building		
Offset, ft.	El., ft.		Offset, ft.	El., ft.	
0	18.2		0	18.8	
0.1	13.2		0.1	13.2	(assume 1-ft.-wide opening at
5.1	13.2	(actual width varies, use 5 ft.	1.1	13.2	lower el. to account for
5.2	18.2	from Ex. Cond. Plan)	1.2	15.4	holes btwn stones in wall)
			11.1	16	
			17	18.8	

7. High Street

Storage upstream of culvert

Elevation, ft.	Area, ft^2	Area, acres	Source
5.2	0	0.0	Culvert invert El. from SA survey
7.7	280	0.006	Estimated from SA survey and site geometry
9.4	470	0.011	Estimated from SA survey and site geometry
10	2500	0.057	LiDAR
11	5000	0.115	LiDAR and SA field observations
12	8600	0.197	LiDAR and SA field observations
13	11200	0.257	LiDAR and SA field observations

Outlets

Model flow overtopping road as broad-crested weir - use El. 11.5 (from SA survey), length = 150 ft. (estimated based on Ex. Cond. Plan and LiDAR) and breadth = 50 ft. (estimated using aerial photography)

Model culverts using discharge multiplier = 2 (for two pipes), length = 50 ft., invert/outlet El. = 5.2/4.7 ft. (SA survey), ID = 34 in., manning's n = 0.013 (corrugated, PE, smooth interior, typ.), entrance square edge ==> use Ke = 0.5

Other

Starting El. 9 ft. from downstream boundary condition in 100-year flood

8. Downstream boundary condition (Meadow Pond) modeled as link.

100-yr elevation = 9 ft. (FEMA Zone AE)

50-yr, assume El. 8.7, since 50-yr. flood elevation of Atlantic Ocean at Hampton is 0.3 ft. lower than 100-yr El.

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C. MODEL CALIBRATION

Routing:

Routing by Dynamic Storage-Indication method. Model of ponds automatically accounts for tailwater, while reaches and do not respond to tailwater effects.

Base flow:

Drainage area is small (<1 square mile). As a rule of thumb, normal flow is about 1 cfs/square mile. This is consistent with base flows used in model (prior to precipitation).

Model Calibration

						SA Model Results
Event	Precip. (in.)	Location	Obs. Time	Est. hrs> storm start	Est. Obs. El. (ft).	Model El. at obs. time (ft.)
3/31/2010 Stellmach vid (Notes 1,2)	Note 2	D/S side High St culv	~11:30 AM	59.5	5	N/A
		U/S side High St culv			8.5	7.5
		U/S side Mill			13.2	13.1
		Pond at main spill			17.6	17.6
May-06	Note 4	Woodland Rd (Ice Pond Dam), Note 5			32.6	32.6

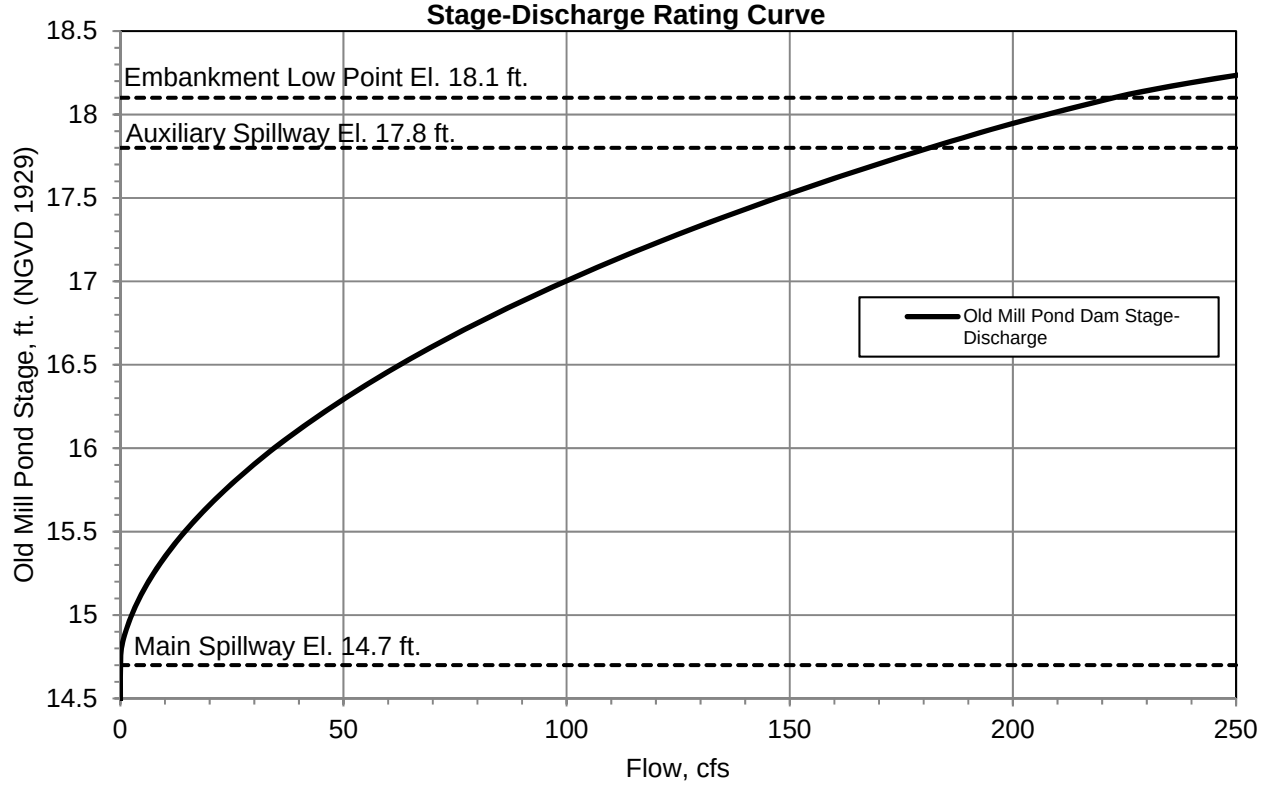
Notes:

1. Model calibrated at Old Mill Pond Dam with video of flooding taken on March 31, 2010 at ~11:30 AM. Video provided by Candace Stellmach, abutter of dam. SA estimated water elevations from video based on visual correlation with site features.
2. Hourly precipitation for storm March 29 to 31, 2010 obtained from Northeast Regional Climate Center (NRCC). Rainfall over ~59.5 hours preceding time of video observations was about 5.6 inches. Storm modeled using historic hourly rainfall distribution from NRCC and AMC = 3.
4. Dam configuration differed from existing configuration. SA assumed 2010 configuration similar to configuration observed by NHDES in their 2012 inspection, including broad-crested weir (25 ft. long, 2 ft. breadth, crest El. 16.9 ft.) upstream of main spillway.
4. Precipitation for May 2006 (Mother's Day) storm obtained from National Climactic Data Center, which reports 6.6 in. rain at North Hampton, NH over 24 hours. Storm modeled as SCS Type III 24-hour, using AMC = 3.
5. Hydraulic model calibrated at Ice Pond Dam with observation during 2006 (Mother's Day) storm. Mr. Jay Diener of Hampton Conservation Commission indicated "water was overtopping the dam and backing up from the culvert such the water was about 6-9" from the edge of the road bed." From Ice Pond Dam existing condtions survey, gravel shoulder El. ~32.9 to 33.3 ft. Judge that abutter observation corresponds to ~El. 32.6 ft.
6. Water elevations predicted by the model show good agreement with observations within the likely accuracy of the observations. The model shows lower water elevation than the 2010 observation at High St. culvert.

D. MODEL RESULTS 50- AND 100-YEAR FLOODS - Existing Configuration Without Beaver Dam

		Spillway Design Flood (Q_{100}):	50-Year Flood (Q_{50}):
Peak Inflow to Old Mill Pond	cfs	232	184
Peak Outflow at Old Mill Pond Dam	cfs	157	107
Old Mill Pond Peak El.	cfs	17.6	17.1
Freeboard to embankment at peak	ft.	~0.5	~1.0
Freeboard to aux. spillway at peak	ft.	~0.2	~0.7

Old Mill Pond Dam
Existing Configuration Without Beaver Dam
Stage-Discharge Rating Curve



NOTES:
1. Stage-discharge curve assumes no tailwater effect on dam discharge, however, effects of tailwater within the range of flows shown are likely less than 0.1 ft.

Revisions:
By: NAO/JET Date: 9/26/2013
By: Date:

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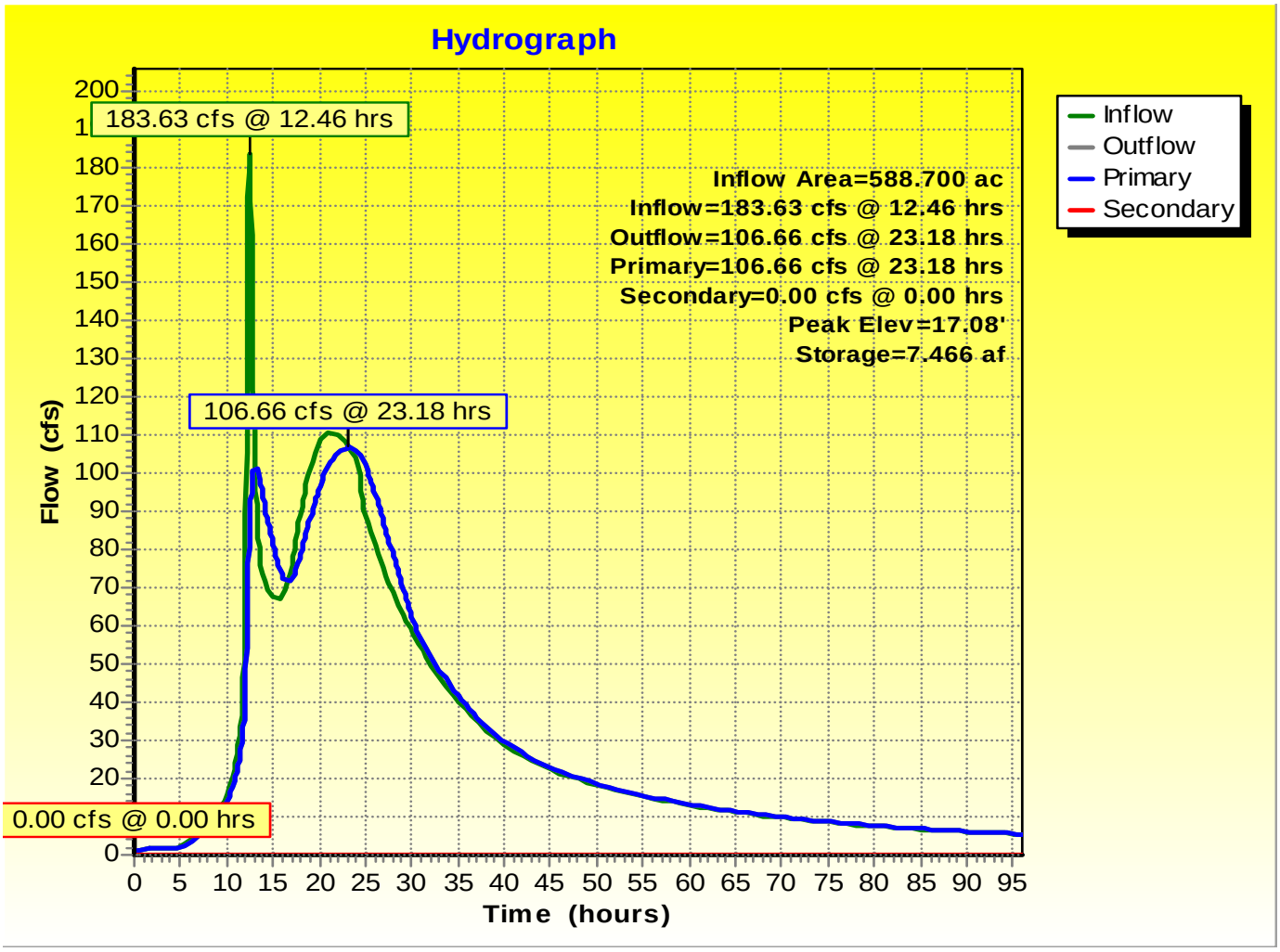
Old Mill Pond Dam - 50-year flood hydrograph - Existing Configuration Without Beaver Dam



NOTES:

1. 50-year, 24-hour rainfall of 7.6 inches provided by NRCC based on their statistical analysis of regional historical measured rainfall.
2. SA modeled hydrology and hydraulics of drainage area and dam using HydroCAD10.
3. Early peak inflow from 12 to 13 hours is largely direct runoff to Old Mill Pond, which occurs more rapidly than runoff from areas further upstream.

Revisions:
By: NAO/JET Date: 9/26/2013
By: Date:

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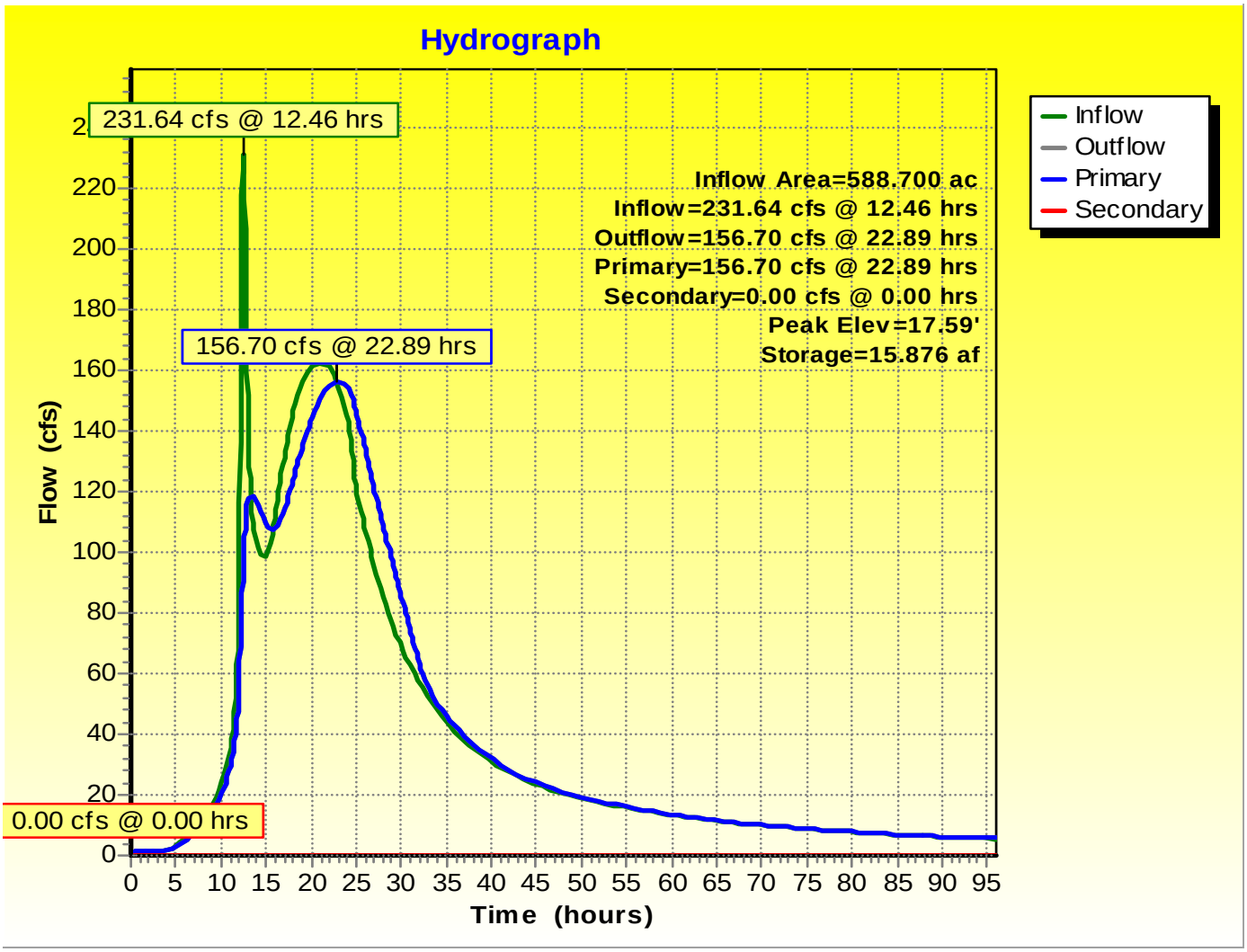
Original Work:
By: NAO Date: August 6, 2013 Subject: Appendix B - Hydrologic and Hydraulic Evaluation
Checked By: JET Date: August 9, 2013

Old Mill Pond Dam - 100-year flood hydrograph - Existing Configuration Without Beaver Dam



NOTES:
1. 100-year, 24-hour rainfall of 9.1 inches provided by NRCC based on their statistical analysis of regional historical measured rainfall.
2. SA modeled hydrology and hydraulics of drainage area and dam using HydroCAD10.
3. Early peak inflow from 12 to 13 hours is largely direct runoff to Old Mill Pond, which occurs more rapidly than runoff from areas further upstream.

Revisions:
By: NAO/JET Date: 9/26/2013
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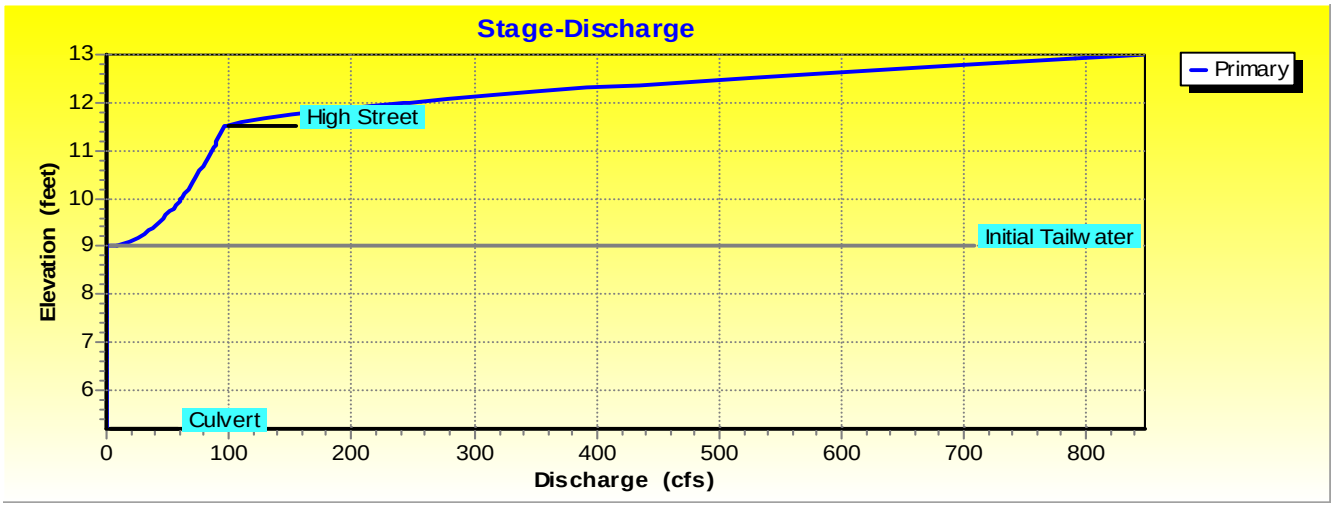
High Street Culvert Results

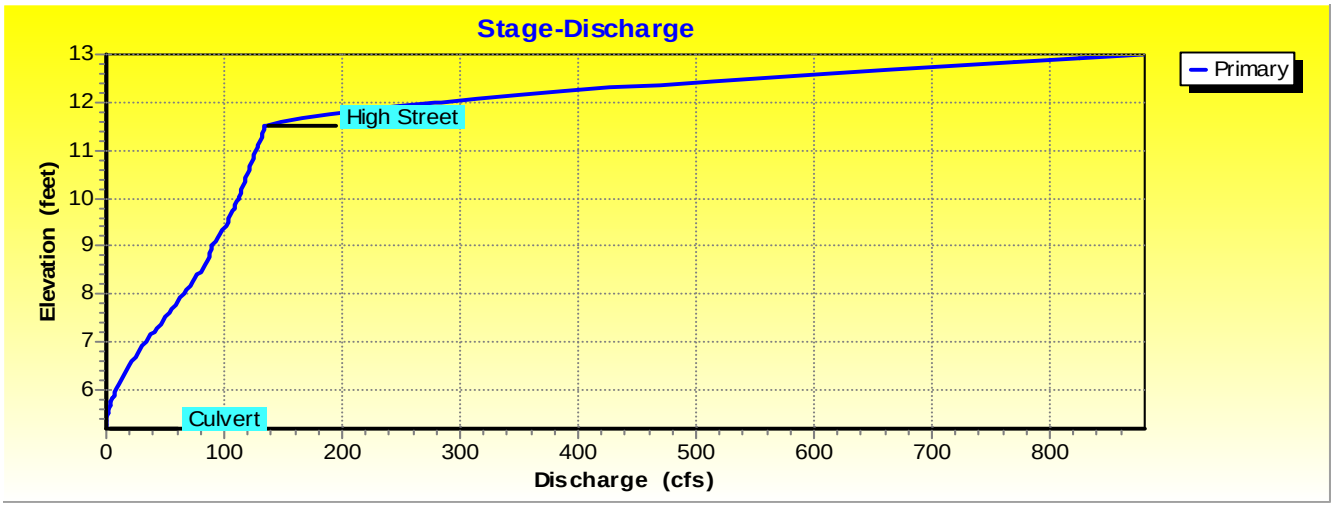
		100-Year Flood (Q_{100}):	50-Year Flood (Q_{50}):
Peak Inflow	cfs	157	107
Peak Outflow	cfs	157	107
Peak El.	cfs	11.8	11.6
Peak road overtopping depth	ft.	~0.3	~0.1

Note: Results above assume Meadow Pond (tailwater) El. = 8.7 ft.

Stage-discharge rating curve (tailwater El. 8.7 ft.) Flow at road overtopping ~100 cfs



Stage-discharge rating curve (tailwater El. 5 ft. or lower) Flow at road overtopping ~120 cfs



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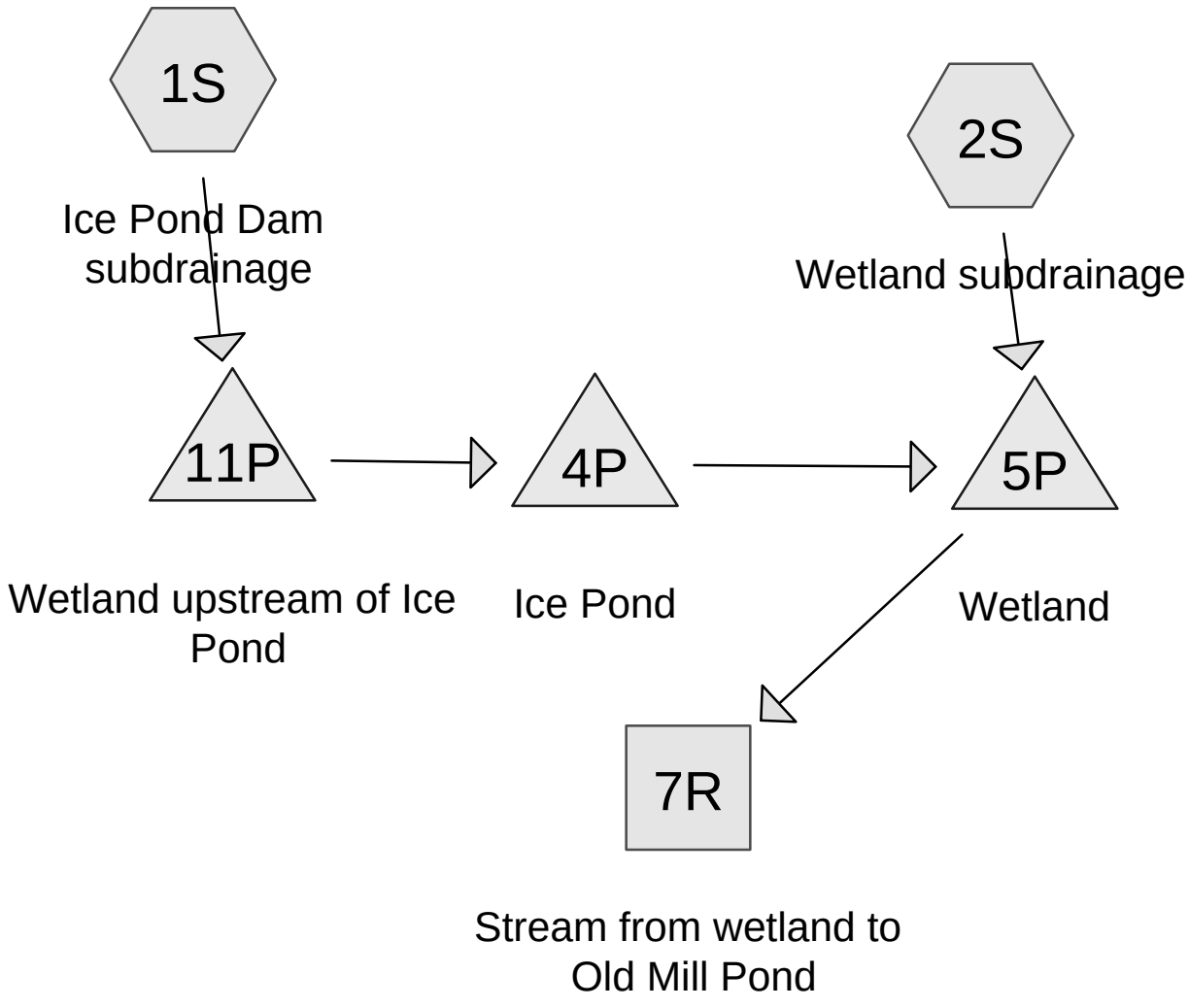


Subcat Reach Pond Link

Routing Diagram for 111-12-002 HydroCAD Existing Upstream

Prepared by Stephens Associates Consulting Engineers, LLC, Printed 9/27/2013

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
48.600	70	1/2 acre lots, 25% imp, HSG B (1S)
28.200	75	1/2 acre lots, 25% imp, HSG B/C (1S)
61.800	75	1/2 acre lots, 25% imp, HSG B/D/B (2S)
15.100	77	2 acre lots, 12% imp, HSG C (2S)
59.900	98	Water Surface, HSG D (1S, 2S)
5.400	73	Woods, Fair, HSG C (2S)
168.500	60	Woods,Good, HSG B/D/B (1S)
46.000	76	Woods/grass comb., Fair, HSG C (1S)
68.500	82	Woods/grass comb., Fair, HSG D (1S, 2S)
502.000	**73**	**TOTAL AREA**

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Ice Pond Dam Runoff Area=368.800 ac 11.98% Impervious Runoff Depth=5.42"
Flow Length=7,913' Slope=0.0456 '/' Tc=103.9 min CN=70 Runoff=467.65 cfs 166.672 af

Subcatchment 2S: Wetland subdrainage Runoff Area=133.200 ac 39.16% Impervious Runoff Depth=6.91"
Flow Length=3,149' Slope=0.0492 '/' Tc=33.6 min CN=82 Runoff=379.98 cfs 76.698 af

Reach 7R: Stream from wetland to Avg. Flow Depth=2.20' Max Vel=1.91 fps Inflow=147.03 cfs 246.365 af
L=2,300.0' S=0.0029 '/' Capacity=3,632.32 cfs Outflow=146.94 cfs 246.100 af

Pond 4P: Ice Pond Peak Elev=32.57' Storage=50.675 af Inflow=199.11 cfs 173.267 af
Outflow=132.89 cfs 171.358 af

Pond 5P: Wetland Peak Elev=24.04' Storage=109.640 af Inflow=382.35 cfs 249.622 af
Outflow=146.33 cfs 240.808 af

Pond 11P: Wetland upstream of Ice Peak Elev=40.57' Storage=74.617 af Inflow=468.10 cfs 170.217 af
Outflow=198.60 cfs 169.264 af

Total Runoff Area = 502.000 ac Runoff Volume = 243.370 af Average Runoff Depth = 5.82"
80.80% Pervious = 405.638 ac 19.20% Impervious = 96.362 ac

Summary for Subcatchment 1S: Ice Pond Dam subdrainage

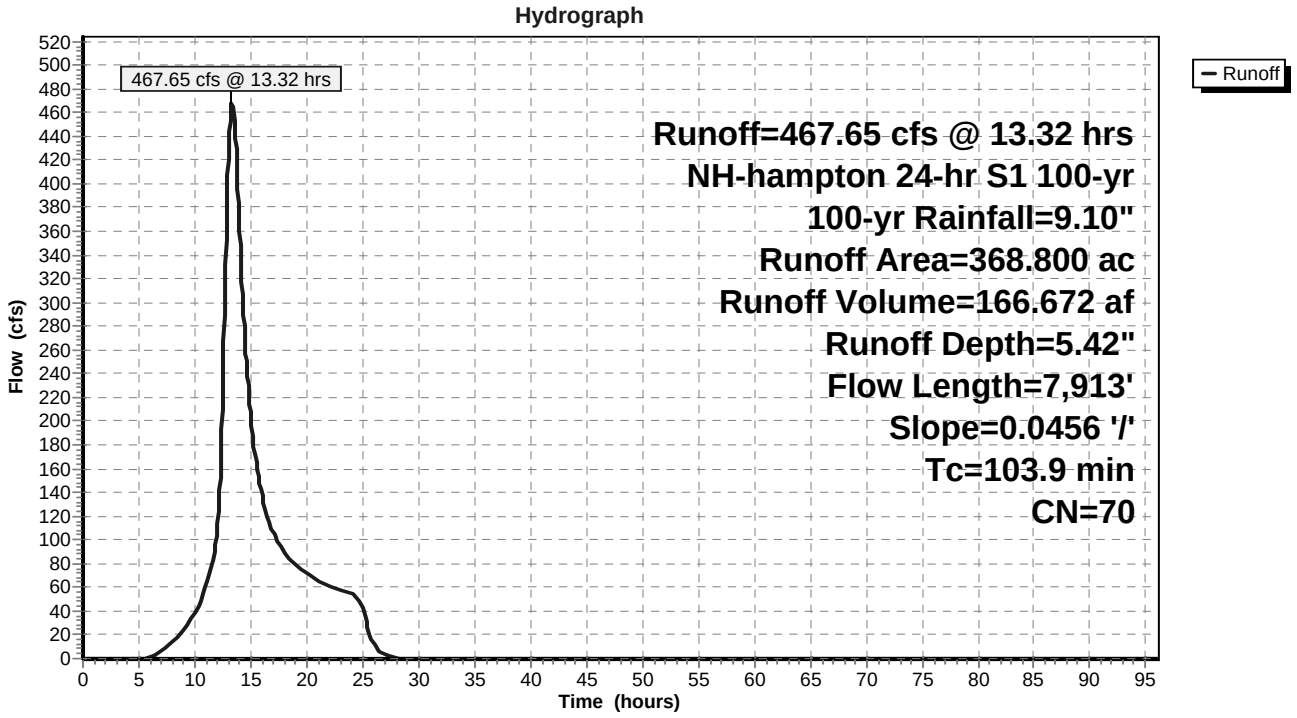
Runoff = 467.65 cfs @ 13.32 hrs, Volume= 166.672 af, Depth= 5.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
NH-hampton 24-hr S1 100-yr 100-yr Rainfall=9.10"

	Area (ac)	CN	Description
	48.600	70	1/2 acre lots, 25% imp, HSG B
	25.000	98	Water Surface, HSG D
*	168.500	60	Woods,Good, HSG B/D/B
*	28.200	75	1/2 acre lots, 25% imp, HSG B/C
	46.000	76	Woods/grass comb., Fair, HSG C
	52.500	82	Woods/grass comb., Fair, HSG D
	368.800	70	Weighted Average
	324.600	66	88.02% Pervious Area
	44.200	98	11.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
103.9	7,913	0.0456	1.27		**Lag/CN Method,**

Subcatchment 1S: Ice Pond Dam subdrainage



Summary for Subcatchment 2S: Wetland subdrainage

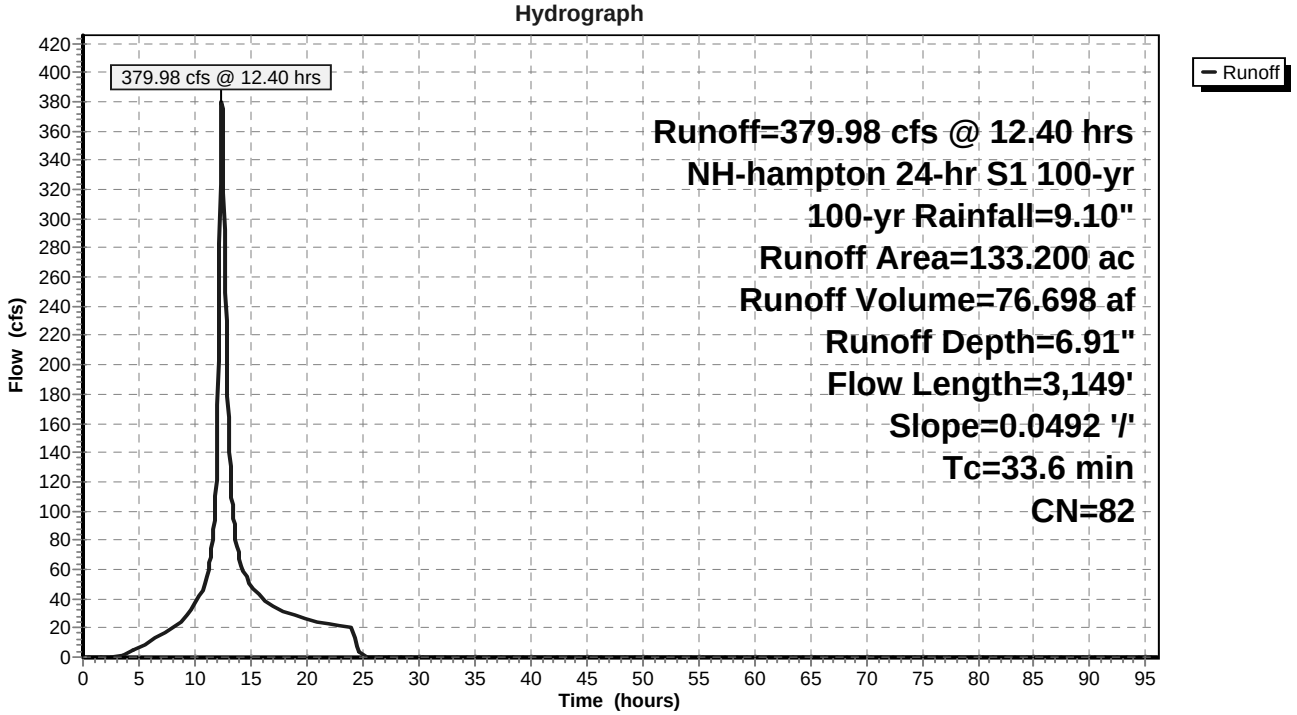
Runoff = 379.98 cfs @ 12.40 hrs, Volume= 76.698 af, Depth= 6.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
NH-hampton 24-hr S1 100-yr 100-yr Rainfall=9.10"

	Area (ac)	CN	Description
*	61.800	75	1/2 acre lots, 25% imp, HSG B/D/B
	16.000	82	Woods/grass comb., Fair, HSG D
	5.400	73	Woods, Fair, HSG C
	15.100	77	2 acre lots, 12% imp, HSG C
*	34.900	98	Water Surface, HSG D
	133.200	82	Weighted Average
	81.038	72	60.84% Pervious Area
	52.162	98	39.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.6	3,149	0.0492	1.56		**Lag/CN Method,**

Subcatchment 2S: Wetland subdrainage



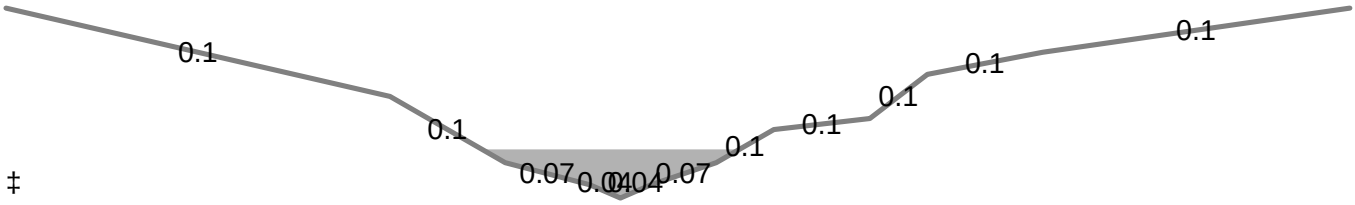
Summary for Reach 7R: Stream from wetland to Old Mill Pond

Inflow Area = 502.000 ac, 19.20% Impervious, Inflow Depth > 5.89" for 100-yr event
Inflow = 147.03 cfs @ 21.19 hrs, Volume= 246.365 af, Incl. 0.70 cfs Base Flow
Outflow = 146.94 cfs @ 21.45 hrs, Volume= 246.100 af, Atten= 0%, Lag= 16.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.91 fps, Min. Travel Time= 20.1 min
Avg. Velocity = 1.24 fps, Avg. Travel Time= 30.8 min

Peak Storage= 176,821 cf @ 21.45 hrs
Average Depth at Peak Storage= 2.20'
Bank-Full Depth= 8.60' Flow Area= 1,230.3 sf, Capacity= 3,632.32 cfs

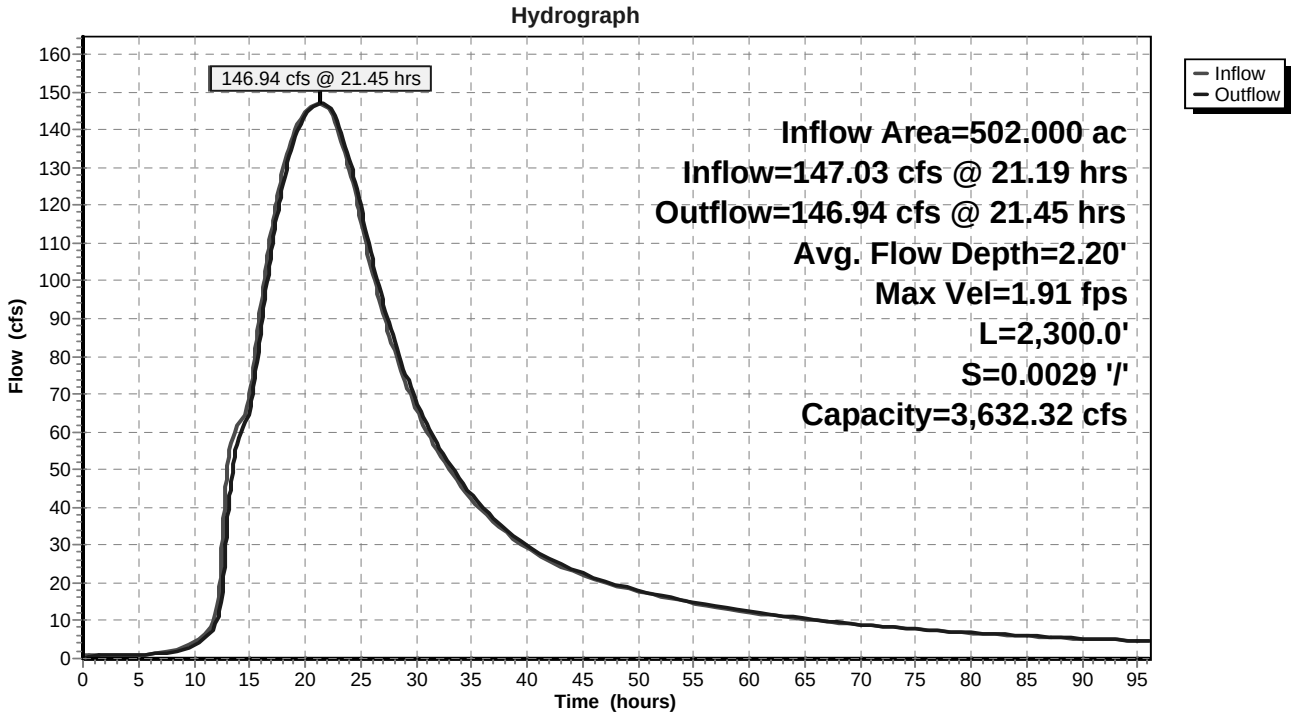
Custom cross-section, Length= 2,300.0' Slope= 0.0029 '/' (105 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 21.00', Outlet Invert= 14.30'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	26.00	0.00		
100.00	22.00	4.00	0.100	
130.00	19.00	7.00	0.100	Winding stream, pools & shoals
152.00	18.00	8.00	0.070	Medium-dense brush, winter
160.00	17.40	8.60	0.040	Heavy timber, flow below branches
168.00	18.00	8.00	0.040	Winding stream, pools & shoals
185.00	19.00	7.00	0.070	Medium-dense brush, winter
200.00	20.50	5.50	0.100	Heavy timber, flow below branches
225.00	21.00	5.00	0.100	
240.00	23.00	3.00	0.100	
270.00	24.00	2.00	0.100	
350.00	26.00	0.00	0.100	

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
0.60	4.8	16.0	11,045	4.32
1.60	40.3	55.1	92,690	63.65
3.10	145.3	85.2	334,212	334.68
3.60	195.3	115.3	449,190	470.44
4.60	319.1	132.9	733,815	841.85
5.60	467.8	165.5	1,075,940	1,320.43
6.60	660.3	220.5	1,518,690	1,906.17
8.60	1,230.3	350.6	2,829,690	3,632.32

Reach 7R: Stream from wetland to Old Mill Pond



Summary for Pond 4P: Ice Pond

Inflow Area = 368.800 ac, 11.98% Impervious, Inflow Depth > 5.64" for 100-yr event
Inflow = 199.11 cfs @ 15.05 hrs, Volume= 173.267 af, Incl. 0.50 cfs Base Flow
Outflow = 132.89 cfs @ 17.98 hrs, Volume= 171.358 af, Atten= 33%, Lag= 175.4 min
Primary = 132.89 cfs @ 17.98 hrs, Volume= 171.358 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Starting Elev= 30.00' Surf.Area= 8.900 ac Storage= 17.800 af
Peak Elev= 32.57' @ 17.98 hrs Surf.Area= 15.706 ac Storage= 50.675 af (32.875 af above start)

Plug-Flow detention time= 586.2 min calculated for 153.476 af (89% of inflow)
Center-of-Mass det. time= 263.0 min (1,717.7 - 1,454.6)

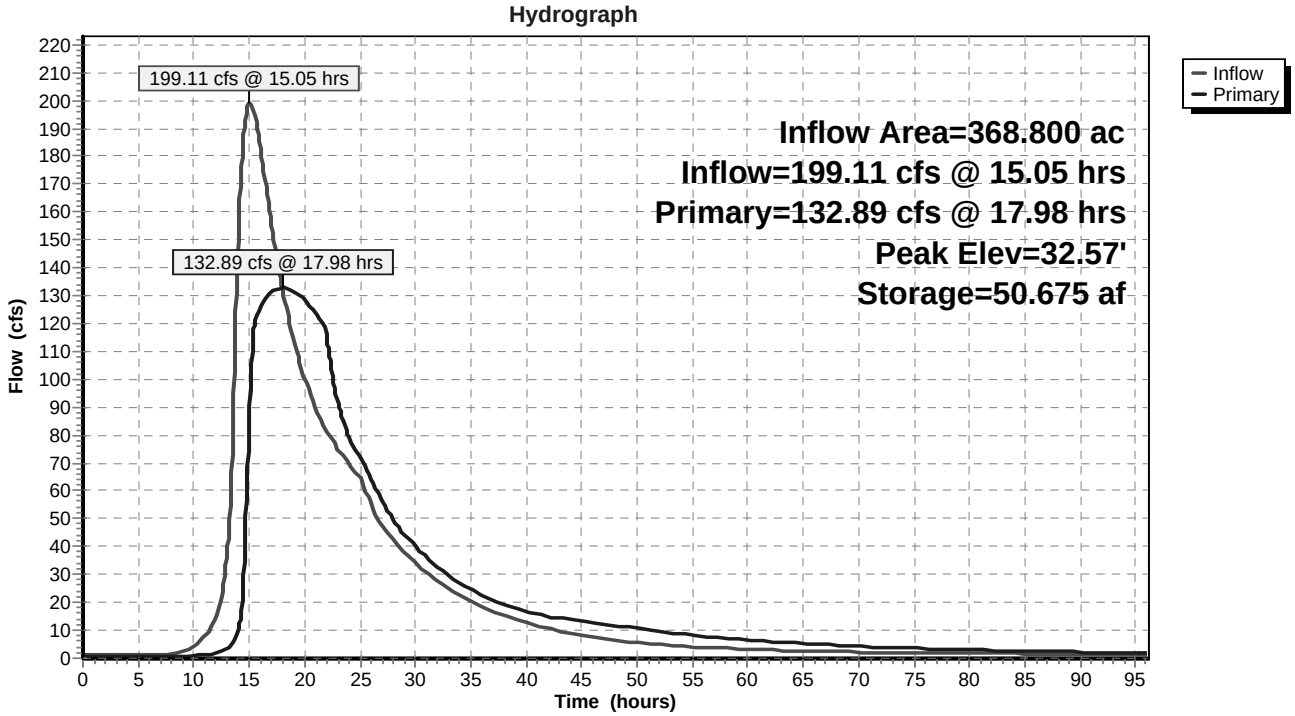
Volume	Invert	Avail.Storage	Storage Description
#1	26.00'	96.200 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
26.00	0.000	0.000	0.000
30.00	8.900	17.800	17.800
31.00	12.500	10.700	28.500
32.00	14.500	13.500	42.000
33.00	16.600	15.550	57.550
34.00	19.200	17.900	75.450
35.00	22.300	20.750	96.200

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	**125.0' long x 50.0' breadth Woodland Road** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Primary	26.20'	**50.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 25.85' / 26.20' S= -0.0070 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 13.64 sf
#3	Device 2	29.85'	**3.5' long x 2.5' breadth Stone spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 Coef. (English) 2.48 2.60 2.60 2.60 2.64 2.65 2.68 2.75 2.74 2.76 2.89 3.05 3.19 3.32
#4	Device 2	31.20'	**22.0' long x 15.0' breadth Auxiliary spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Device 2	31.30'	**25.0' long x 2.5' breadth Top of dam** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 Coef. (English) 2.48 2.60 2.60 2.60 2.64 2.65 2.68 2.75 2.74 2.76 2.89 3.05 3.19 3.32

Primary OutFlow Max=132.88 cfs @ 17.98 hrs HW=32.57' TW=23.96' (Dynamic Tailwater)
- **1=Woodland Road** (Controls 0.00 cfs)
- **2=Culvert** (Barrel Controls 132.88 cfs @ 9.75 fps)
  - **3=Stone spillway** (Passes < 46.61 cfs potential flow)
  - **4=Auxiliary spillway** (Passes < 93.58 cfs potential flow)
  - **5=Top of dam** (Passes < 95.70 cfs potential flow)

Pond 4P: Ice Pond



Summary for Pond 5P: Wetland

Inflow Area = 502.000 ac, 19.20% Impervious, Inflow Depth > 5.97" for 100-yr event
Inflow = 382.35 cfs @ 12.40 hrs, Volume= 249.622 af, Incl. 0.20 cfs Base Flow
Outflow = 146.33 cfs @ 21.19 hrs, Volume= 240.808 af, Atten= 62%, Lag= 527.0 min
Primary = 146.33 cfs @ 21.19 hrs, Volume= 240.808 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Starting Elev= 22.60' Surf.Area= 34.905 ac Storage= 45.377 af
Peak Elev= 24.04' @ 21.23 hrs Surf.Area= 53.921 ac Storage= 109.640 af (64.264 af above start)

Plug-Flow detention time= 997.9 min calculated for 195.328 af (78% of inflow)
Center-of-Mass det. time= 409.4 min (1,864.2 - 1,454.9)

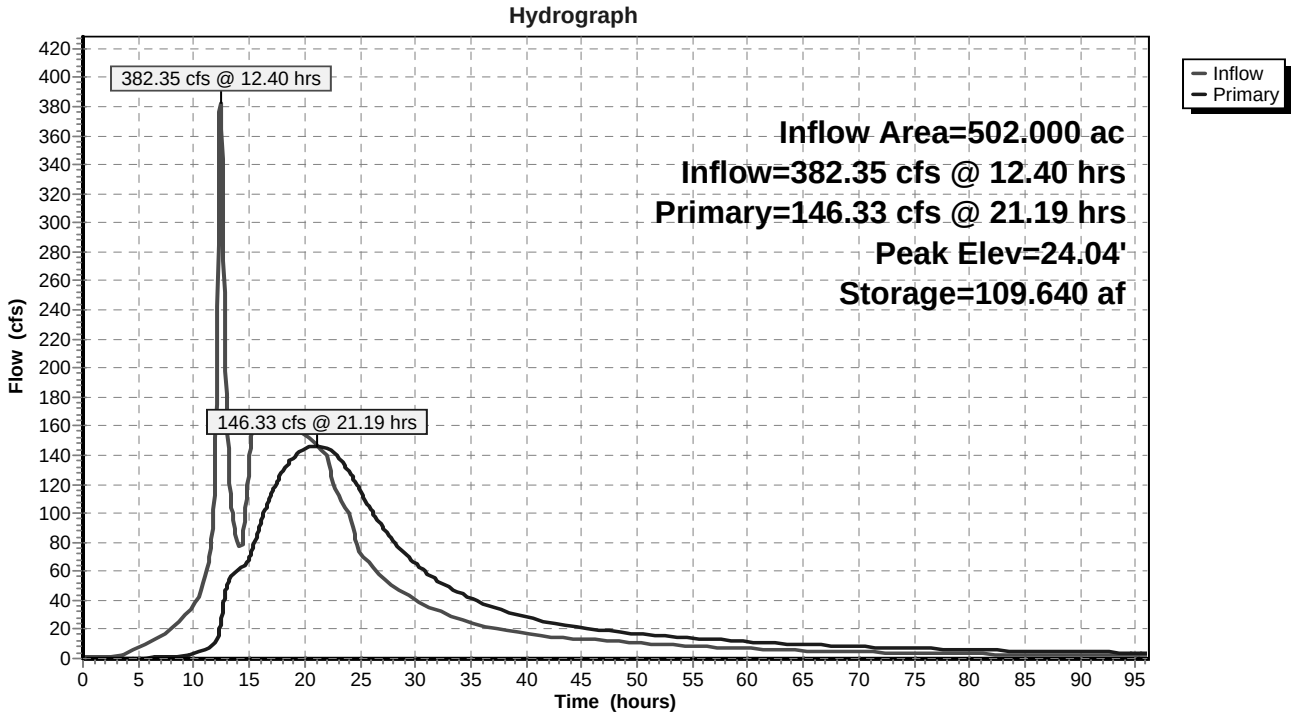
Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	290.500 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
20.00	0.000	0.000	0.000
24.00	53.700	107.400	107.400
25.00	59.000	56.350	163.750
26.00	63.400	61.200	224.950
27.00	67.700	65.550	290.500

Device	Routing	Invert	Outlet Devices
#1	Primary	22.50'	**Cross-section at pond outlet, C= 2.60** Offset (feet) 0.00 100.00 170.00 215.00 250.00 360.00 362.00 368.00 374.00 376.00 420.00 460.00 610.00 665.00 730.00 Height (feet) 11.00 8.00 5.00 6.00 4.00 2.00 1.70 1.50 1.70 2.00 4.50 3.50 9.00 8.00 11.00

Primary OutFlow Max=146.32 cfs @ 21.19 hrs HW=24.04' TW=23.20' (Dynamic Tailwater)
↑—**1=Cross-section at pond outlet** (Weir Controls 146.32 cfs @ 1.43 fps)

Pond 5P: Wetland



Summary for Pond 11P: Wetland upstream of Ice Pond

Inflow Area = 368.800 ac, 11.98% Impervious, Inflow Depth > 5.54" for 100-yr event
Inflow = 468.10 cfs @ 13.32 hrs, Volume= 170.217 af, Incl. 0.45 cfs Base Flow
Outflow = 198.60 cfs @ 15.05 hrs, Volume= 169.264 af, Atten= 58%, Lag= 104.3 min
Primary = 198.60 cfs @ 15.05 hrs, Volume= 169.264 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Starting Elev= 38.70' Surf.Area= 16.065 ac Storage= 5.623 af
Peak Elev= 40.57' @ 15.05 hrs Surf.Area= 55.681 ac Storage= 74.617 af (68.994 af above start)

Plug-Flow detention time= 516.4 min calculated for 163.555 af (96% of inflow)
Center-of-Mass det. time= 438.3 min (1,420.9 - 982.6)

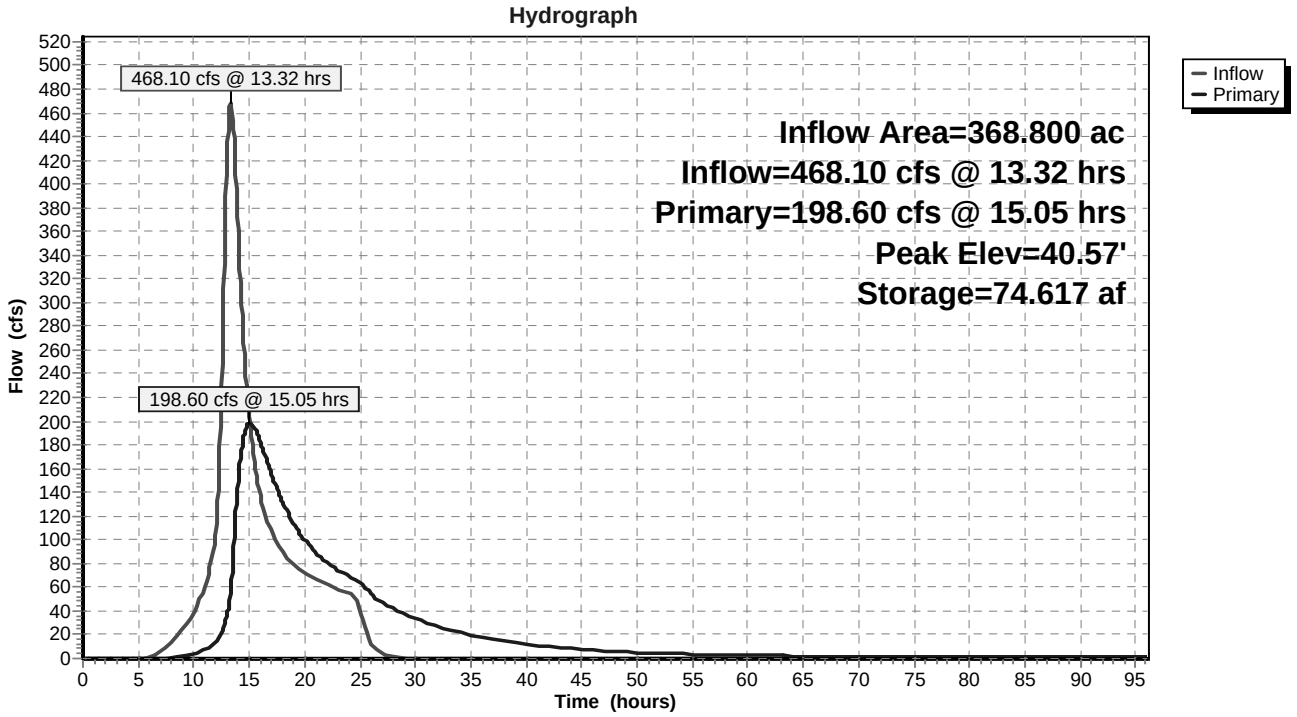
Volume	Invert	Avail.Storage	Storage Description
#1	38.00'	383.450 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

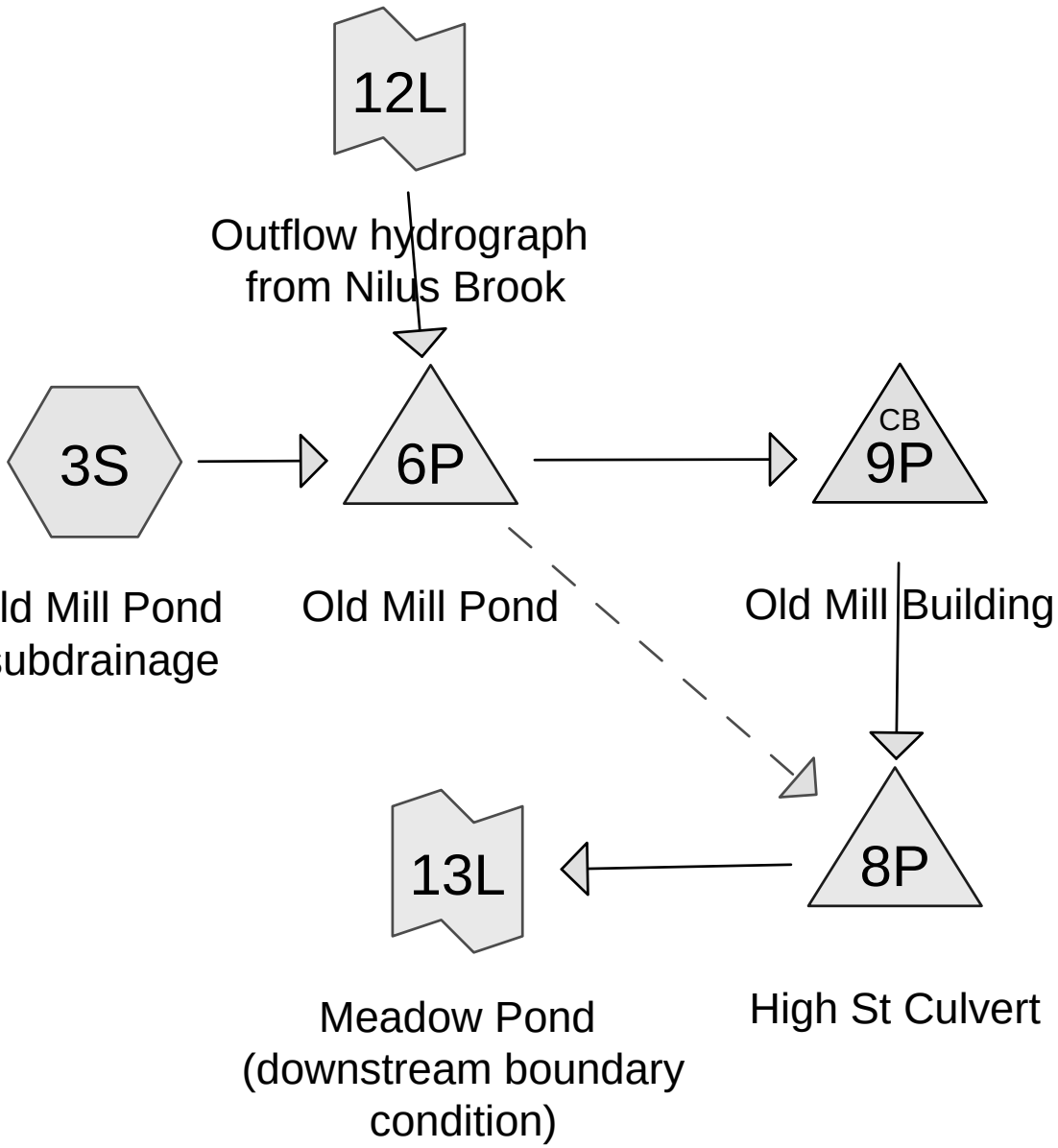
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
38.00	0.000	0.000	0.000
40.00	45.900	45.900	45.900
41.00	63.200	54.550	100.450
42.00	67.800	65.500	165.950
43.00	70.900	69.350	235.300
44.00	73.900	72.400	307.700
45.00	77.600	75.750	383.450

Device	Routing	Invert	Outlet Devices
#1	Primary	38.50'	**Asymmetrical Weir, C= 2.60** Offset (feet) 2,250.00 2,500.00 2,550.00 2,552.00 2,558.00 2,564.00 2,566.00 2,600.00 2,700.00 Height (feet) 10.00 5.00 5.00 4.00 3.50 4.00 5.00 5.00 10.00

Primary OutFlow Max=198.60 cfs @ 15.05 hrs HW=40.57' TW=31.89' (Dynamic Tailwater)
↑—**1=Asymmetrical Weir** (Weir Controls 198.60 cfs @ 1.97 fps)

Pond 11P: Wetland upstream of Ice Pond





Subcat Reach Pond Link

Routing Diagram for 111-12-002 HydroCAD Existing Downstream
Prepared by Stephens Associates Consulting Engineers, LLC, Printed 9/27/2013
HydroCAD® 10.00 s/n 02146 © 2013 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.900	68	1 acre lots, 20% imp, HSG B (3S)
42.700	73	1 acre lots, 20% imp, HSG B/D/B (3S)
5.200	98	Water Surface, HSG D (3S)
18.000	73	Woods, Fair, HSG C (3S)
14.900	82	Woods/grass comb., Fair, HSG D (3S)
86.700	**76**	**TOTAL AREA**

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 3S: Old Mill Pond Runoff Area=86.700 ac 17.21% Impervious Runoff Depth=6.17"
Flow Length=2,814' Slope=0.0497 '/' Tc=36.8 min CN=76 Runoff=215.08 cfs 44.566 af

Pond 6P: Old Mill Pond Peak Elev=17.59' Storage=15.876 af Inflow=231.64 cfs 298.007 af
Primary=156.70 cfs 297.903 af Secondary=0.00 cfs 0.000 af Outflow=156.70 cfs 297.903 af

Pond 8P: High St Culvert Peak Elev=11.77' Storage=10,539 cf Inflow=156.70 cfs 297.903 af
Outflow=156.70 cfs 297.903 af

Pond 9P: Old Mill Building Peak Elev=14.80' Inflow=156.70 cfs 297.903 af
Outflow=156.70 cfs 297.903 af

100-yr Outflow **Link** Imported from 111-12-002 HydroCAD Existing Upstream~Reach 7R.hce Inflow=146.94 cfs 246.100 af
Area= 502.000 ac 19.20% Imperv. Primary=146.94 cfs 246.100 af

Link 13L: Meadow Pond (downstream boundary condition) Inflow=156.70 cfs 297.903 af
Primary=156.70 cfs 297.903 af

Total Runoff Area = 86.700 ac Runoff Volume = 44.566 af Average Runoff Depth = 6.17"
82.79% Pervious = 71.780 ac 17.21% Impervious = 14.920 ac

Summary for Subcatchment 3S: Old Mill Pond subdrainage

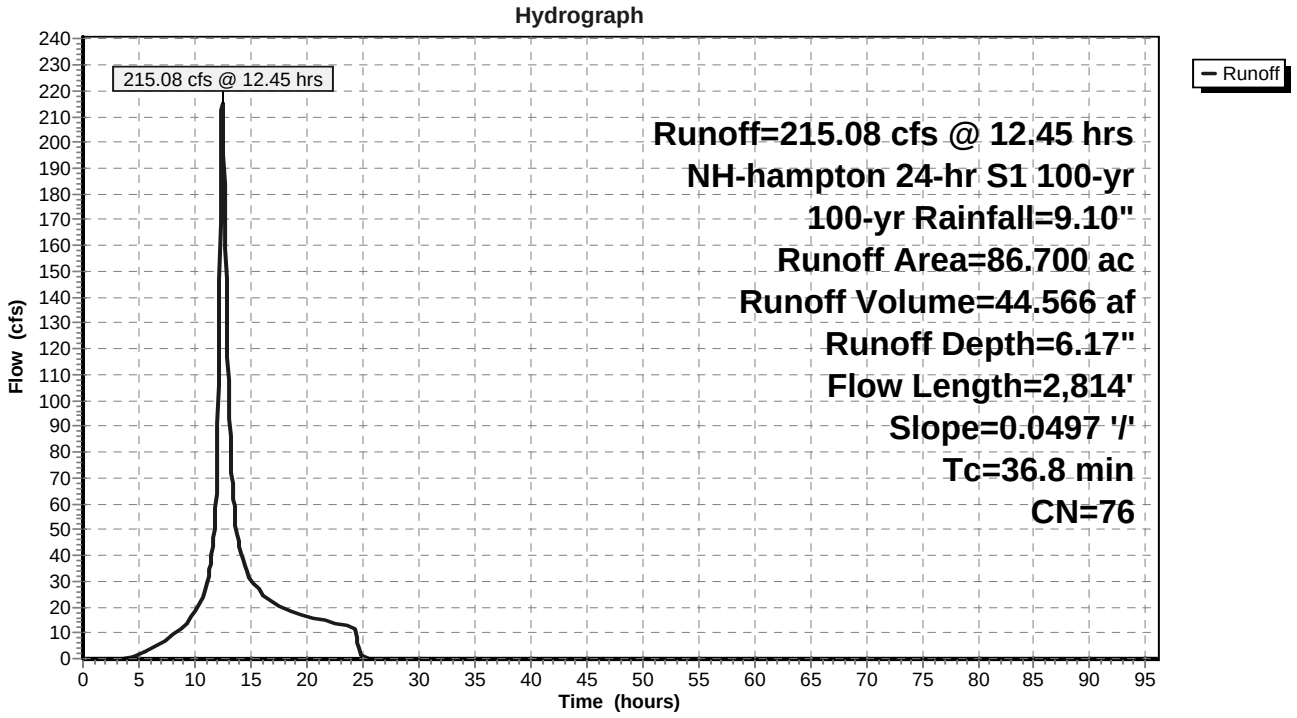
Runoff = 215.08 cfs @ 12.45 hrs, Volume= 44.566 af, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
NH-hampton 24-hr S1 100-yr 100-yr Rainfall=9.10"

	Area (ac)	CN	Description
	5.900	68	1 acre lots, 20% imp, HSG B
	5.200	98	Water Surface, HSG D
	8.000	73	Woods, Fair, HSG C
*	42.700	73	1 acre lots, 20% imp, HSG B/D/B
	14.900	82	Woods/grass comb., Fair, HSG D
	10.000	73	Woods, Fair, HSG C
	86.700	76	Weighted Average
	71.780	71	82.79% Pervious Area
	14.920	98	17.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.8	2,814	0.0497	1.27		**Lag/CN Method,**

Subcatchment 3S: Old Mill Pond subdrainage



Summary for Pond 6P: Old Mill Pond

Inflow Area = 588.700 ac, 18.90% Impervious, Inflow Depth > 6.07" for 100-yr event
Inflow = 231.64 cfs @ 12.46 hrs, Volume= 298.007 af, Incl. 0.92 cfs Base Flow
Outflow = 156.70 cfs @ 22.89 hrs, Volume= 297.903 af, Atten= 32%, Lag= 625.8 min
Primary = 156.70 cfs @ 22.89 hrs, Volume= 297.903 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Starting Elev= 14.88' Surf.Area= 0.286 ac Storage= 0.355 af
Peak Elev= 17.59' @ 22.89 hrs Surf.Area= 19.350 ac Storage= 15.876 af (15.521 af above start)

Plug-Flow detention time= 52.2 min calculated for 297.392 af (100% of inflow)
Center-of-Mass det. time= 44.0 min (1,819.0 - 1,775.0)

Volume	Invert	Avail.Storage	Storage Description
#1	12.40'	80.065 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
12.40	0.000	0.000	0.000
15.00	0.300	0.390	0.390
16.50	2.500	2.100	2.490
17.00	13.000	3.875	6.365
18.00	23.800	18.400	24.765
19.00	27.600	25.700	50.465
20.00	31.600	29.600	80.065

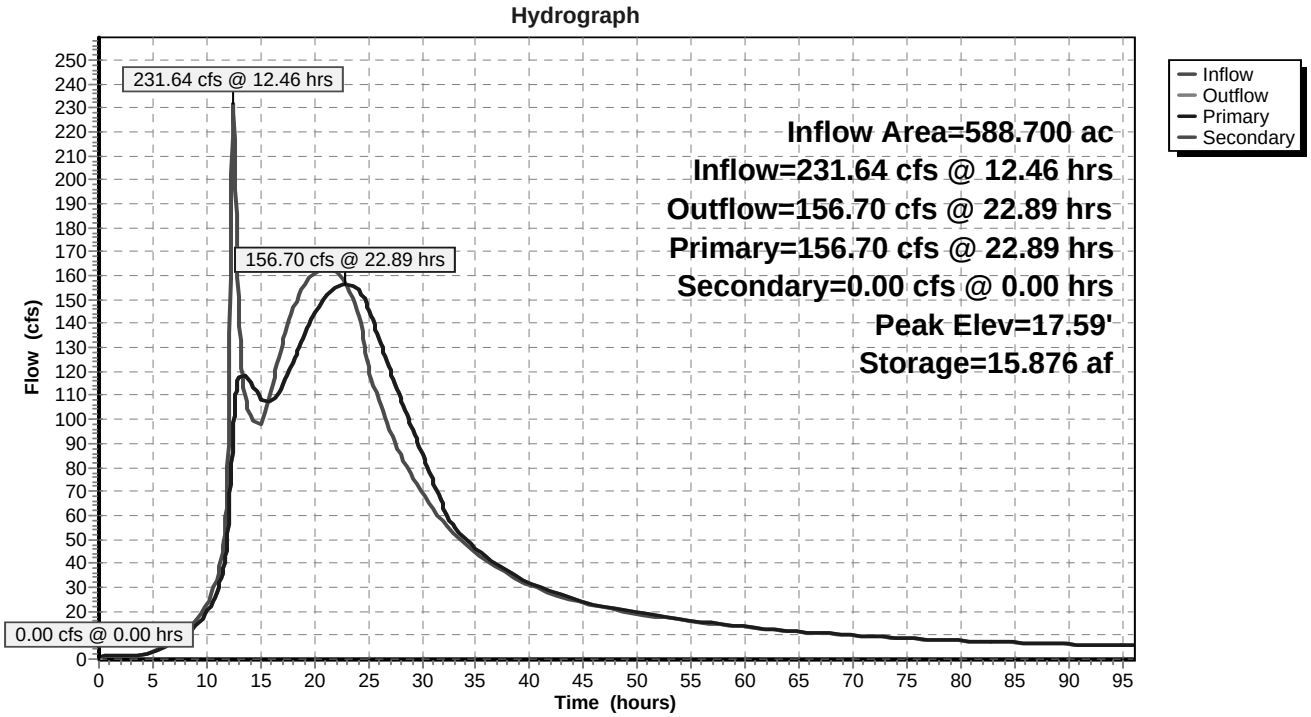
Device	Routing	Invert	Outlet Devices
#1	Primary	14.70'	**Main spillway, C= 2.60** Offset (feet) 90.00 90.00 96.90 100.50 107.70 117.40 117.40 Elev. (feet) 22.00 18.20 16.70 14.70 14.80 18.20 22.00
#2	Secondary	17.90'	**9.5' long x 0.7' breadth Auxiliary spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32
#3	Secondary	18.50'	**Right embankment, C= 2.60** Offset (feet) 0.00 0.00 7.40 26.40 50.70 73.70 90.00 90.10 90.10 Elev. (feet) 22.00 20.30 19.10 19.10 18.60 18.50 18.50 20.30 22.00
#4	Secondary	18.10'	**Left embankment, C= 2.60** Offset (feet) 117.30 117.30 117.40 137.00 156.80 168.20 193.00 212.40 230.30 260.40 260.50 Elev. (feet) 22.00 19.20 18.20 18.10 18.10 18.10 18.50 18.60 18.80 19.20 22.00
#5	Primary	15.43'	**12.5' long x 2.0' breadth 2010 main spillway X 0.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

#6	Primary	16.78'	**25.0' long x 2.0' breadth 2010 stone ring X 0.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=156.70 cfs @ 22.89 hrs HW=17.59' TW=14.80' (Dynamic Tailwater)
- **1=Main spillway** (Weir Controls 156.70 cfs @ 2.75 fps)
- **5=2010 main spillway** (Controls 0.00 cfs)
- **6=2010 stone ring** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=14.89' TW=9.00' (Dynamic Tailwater)
- **2=Auxiliary spillway** (Controls 0.00 cfs)
- **3=Right embankment** (Controls 0.00 cfs)
- **4=Left embankment** (Controls 0.00 cfs)

Pond 6P: Old Mill Pond



Summary for Pond 8P: High St Culvert

Inflow Area = 588.700 ac, 18.90% Impervious, Inflow Depth > 6.07" for 100-yr event
Inflow = 156.70 cfs @ 22.89 hrs, Volume= 297.903 af
Outflow = 156.70 cfs @ 22.90 hrs, Volume= 297.903 af, Atten= 0%, Lag= 0.4 min
Primary = 156.70 cfs @ 22.90 hrs, Volume= 297.903 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Starting Elev= 9.00' Surf.Area= 425 sf Storage= 808 cf
Peak Elev= 11.77' @ 22.90 hrs Surf.Area= 7,769 sf Storage= 10,539 cf (9,731 cf above start)

Plug-Flow detention time= 1.1 min calculated for 297.885 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,819.8 - 1,819.0)

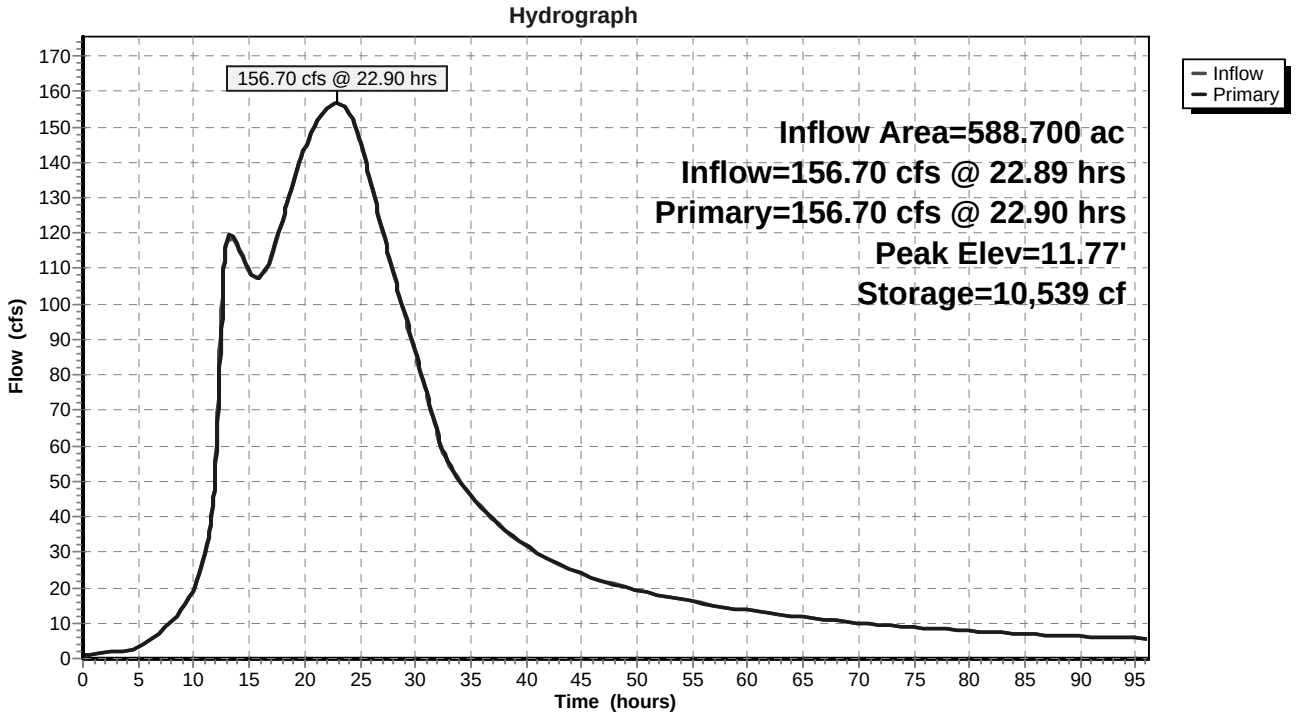
Volume	Invert	Avail.Storage	Storage Description
#1	5.20'	22,344 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.20	0	0	0
7.70	280	350	350
9.40	470	638	988
10.00	2,485	886	1,874
11.00	5,027	3,756	5,630
12.00	8,600	6,814	12,444
13.00	11,200	9,900	22,344

Device	Routing	Invert	Outlet Devices
#1	Primary	11.50'	**150.0' long x 50.0' breadth High Street** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#2	Primary	5.20'	**34.0" Round Culvert X 2.00** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 5.20' / 4.70' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 6.31 sf

Primary OutFlow Max=156.70 cfs @ 22.90 hrs HW=11.77' TW=9.00' (Dynamic Tailwater)
1=High Street (Weir Controls 55.69 cfs @ 1.39 fps)
2=Culvert (Inlet Controls 101.00 cfs @ 8.01 fps)

Pond 8P: High St Culvert



Summary for Pond 9P: Old Mill Building

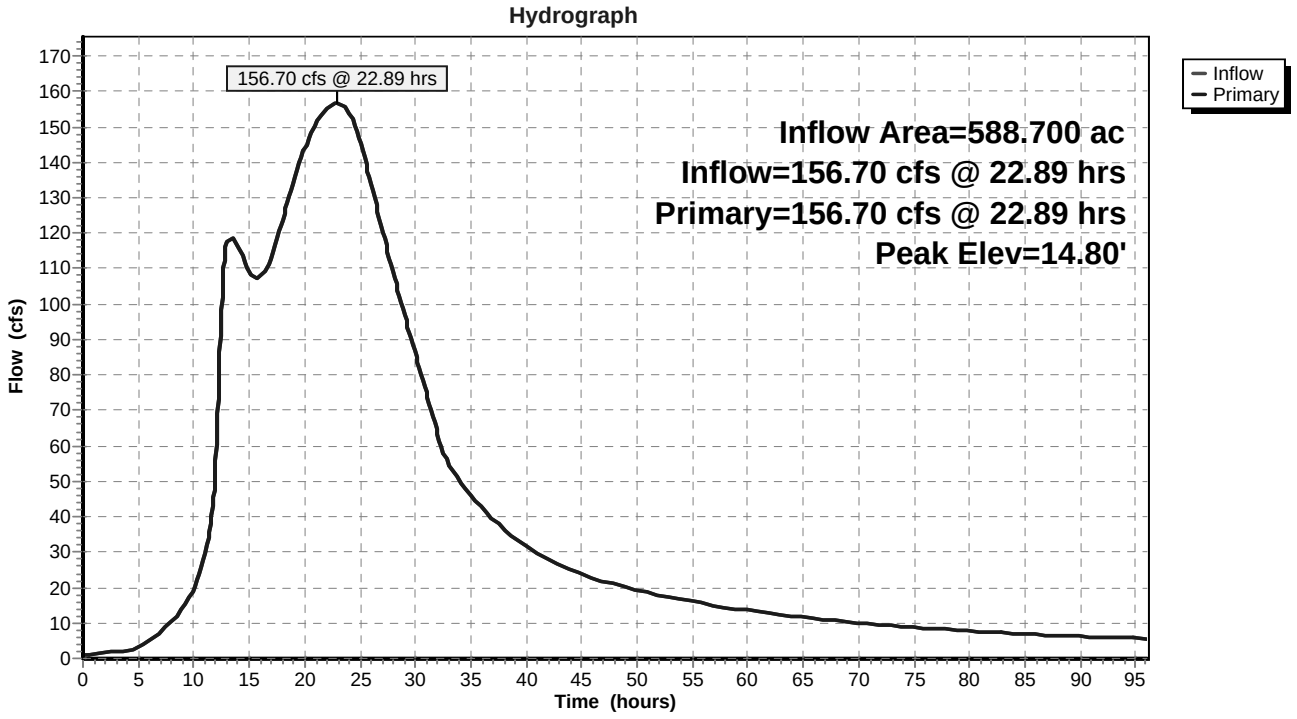
Inflow Area = 588.700 ac, 18.90% Impervious, Inflow Depth > 6.07" for 100-yr event
Inflow = 156.70 cfs @ 22.89 hrs, Volume= 297.903 af
Outflow = 156.70 cfs @ 22.89 hrs, Volume= 297.903 af, Atten= 0%, Lag= 0.0 min
Primary = 156.70 cfs @ 22.89 hrs, Volume= 297.903 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 14.80' @ 22.89 hrs
Flood Elev= 18.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.20'	**Opening Left of Mill, C= 2.60**
			Offset (feet) 0.00 0.00 0.10 5.10 5.20 5.20
			Elev. (feet) 22.00 18.20 13.20 13.20 18.20 22.00
#2	Primary	13.20'	**Opening Right of Mill, C= 2.60**
			Offset (feet) 0.00 0.10 1.10 1.20 11.10 17.00
			Elev. (feet) 18.80 13.20 13.20 15.40 16.00 18.80
#3	Primary	11.50'	**88.8" W x 30.0" H Vert. Flow beneath Mill building** C= 0.600

Primary OutFlow Max=156.70 cfs @ 22.89 hrs HW=14.80' TW=11.77' (Dynamic Tailwater)
- **1=Opening Left of Mill** (Weir Controls 26.34 cfs @ 3.26 fps)
- **2=Opening Right of Mill** (Weir Controls 5.45 cfs @ 3.10 fps)
- **3=Flow beneath Mill building** (Orifice Controls 124.90 cfs @ 6.75 fps)

Pond 9P: Old Mill Building



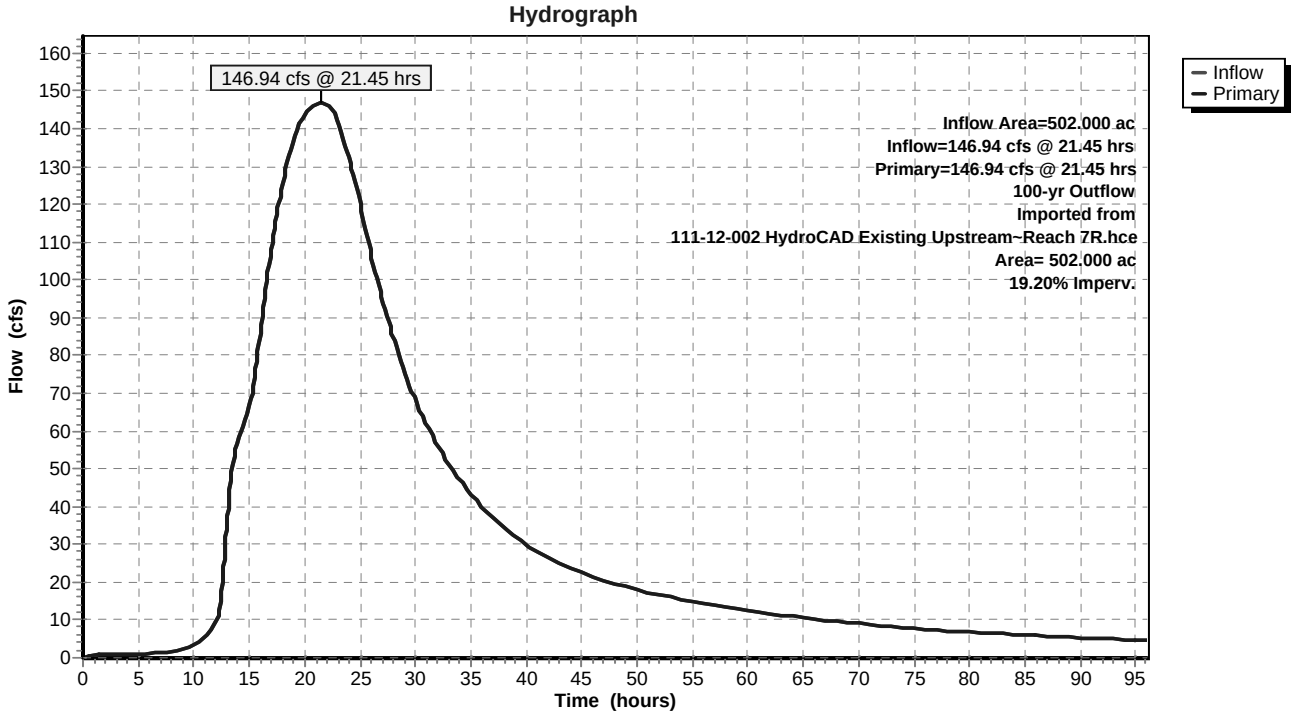
Summary for Link 12L: Outflow hydrograph from Nilus Brook

Inflow Area = 502.000 ac, 19.20% Impervious, Inflow Depth > 5.88" for 100-yr event
Inflow = 146.94 cfs @ 21.45 hrs, Volume= 246.100 af
Primary = 146.94 cfs @ 21.45 hrs, Volume= 246.100 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

100-yr Outflow Imported from 111-12-002 HydroCAD Existing Upstream~Reach 7R.hce

Link 12L: Outflow hydrograph from Nilus Brook



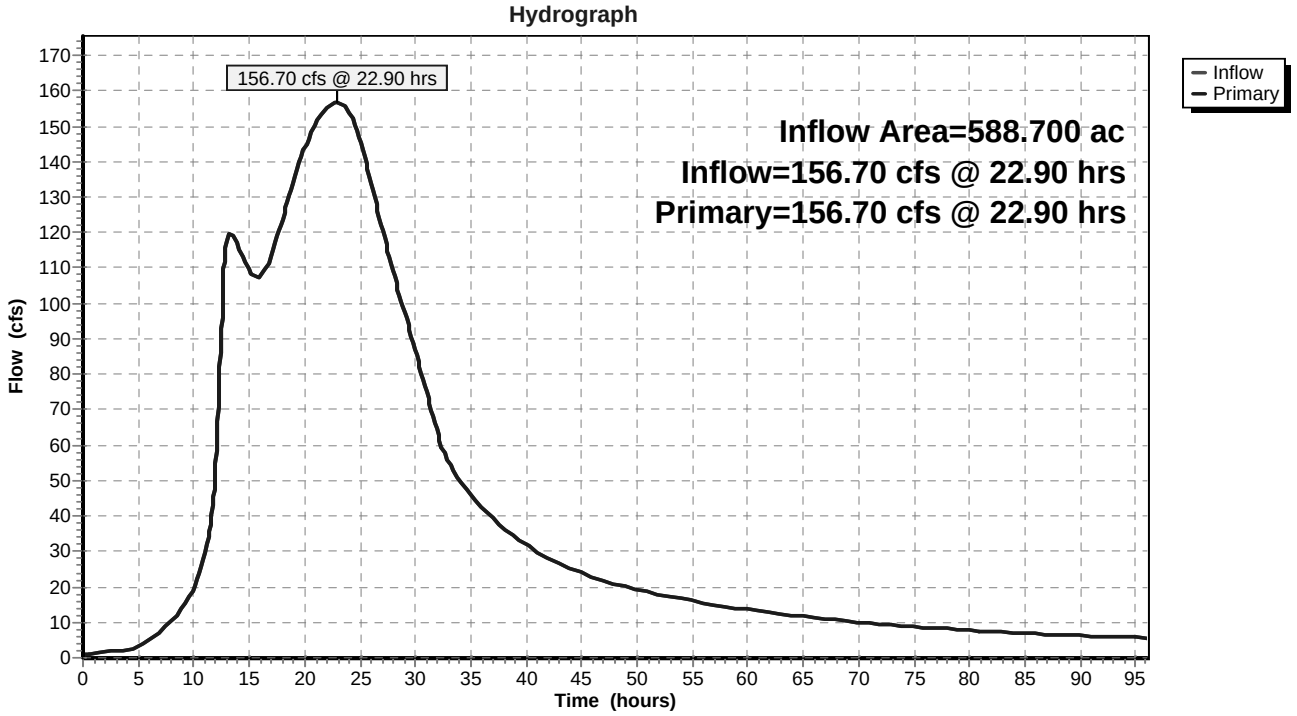
Summary for Link 13L: Meadow Pond (downstream boundary condition)

Inflow Area = 588.700 ac, 18.90% Impervious, Inflow Depth > 6.07" for 100-yr event
Inflow = 156.70 cfs @ 22.90 hrs, Volume= 297.903 af
Primary = 156.70 cfs @ 22.90 hrs, Volume= 297.903 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Fixed water surface Elevation= 9.00'

Link 13L: Meadow Pond (downstream boundary condition)



APPENDIX C

CORRESPONDENCE WITH NHDHR

Please mail the completed form and required material to:

New Hampshire Division of Historical Resources
State Historic Preservation Office
Attention: Review & Compliance
19 Pillsbury Street, Concord, NH 03301-3570

RECEIVED
AUG 16 2013

DHR Use Only	
R&C #	5068
Log In Date	___/___/___
Response Date	___/___/___
Sent Date	___/___/___

Request for Project Review by the New Hampshire Division of Historical Resources

☒ This is a new submittal
☐ This is additional information relating to DHR Review & Compliance (R&C) #:

GENERAL PROJECT INFORMATION

Project Title Old Mill Pond Dam Initial Study of Alternatives

Project Location Near 488 to 490 High Street

City/Town Hampton Tax Map 131, 150, 167 Lot # 131 - 12; 150 - 41,48,52,59,61; 167 - 3b

NH State Plane - Feet Geographic Coordinates: Easting 1216095 Northing 162195
(See RPR Instructions and R&C FAQs for guidance.)

Lead Federal Agency and Contact *(if applicable)* To be Determined. Potentially US Army Corps of Engineers through wetlands permitting requirements
(Agency providing funds, licenses, or permits)
Permit Type and Permit or Job Reference #

State Agency and Contact *(if applicable)* NHDES Dam Bureau (Mr. Charles Corliss) and NHDES Wetlands Bureau (contact to be determined)

Permit Type and Permit or Job Reference # NHDES Dam Bureau State Dam ID No. 105.03; Type permits to be determined.

APPLICANT INFORMATION

Applicant Name Chris Jacobs

Mailing Address 11 Hardardt's Way Phone Number 603-926-3202

City Hampton State NH Zip 03842 Email cjacobs@town.hampton.nh.us

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company Robert Stephens/Stephens Associates Consulting Engineers, LLC

Mailing Address 60 Northrup Drive Phone Number 603-772-1417

City Brentwood State NH Zip 03833 Email rsstephens@stephensengineers.com

Thank You

This form is updated periodically. Please download the current form at www.nh.gov/nhdhr/review. *Please refer to the Request for Project Review Instructions for direction on completing this form.* Submit one copy of this project review form for each project for which review is requested. Include a self-addressed stamped envelope to expedite review response. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation. For some projects, additional information will be needed to complete the Section 106 review. All items and supporting documentation submitted with a review request, including photographs and publications, will be retained by the DHR as part of its review records. Items to be kept confidential should be clearly identified. For questions regarding the DHR review process and the DHR's

PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION

Project Boundaries and Description

- ☒ Attach the relevant portion of a 7.5' USGS Map (photocopied or computer-generated) ***indicating the defined project boundary.*** *(See RPR Instructions and R&C FAQs for guidance.)*
- ☒ Attach a detailed narrative description of the proposed project.
- ☒ Attach a site plan. The site plan should include the project boundaries and areas of proposed excavation.
- ☒ Attach photos of the project area (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) *(Informative photo captions are requested.)*
- ☒ A DHR file review must be conducted to identify properties within or adjacent to the project area. Provide file review results in **Table 1** or within project narrative description. *(Blank table forms are available on the DHR website.)* File review conducted on 07/11/2013.

Architecture

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the project area? ☒ Yes ☐ No
If no, skip to Archaeology section. If yes, submit all of the following information:

Approximate age(s): The Old Grist Mill (aka Deacon Tuck Grist Mill, Tuck-Leavitt Grist Mill) circa 1815. 490 High Street, circa 1959 to 1960.

- ☒ Photographs of ***each*** resource or streetscape located within the project area, with captions, along with a photo key. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☒ If the project involves rehabilitation, demolition, additions, or alterations to existing buildings or structures, provide additional photographs showing detailed project work locations. (i.e. Detail photo of windows if window replacement is proposed.)

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☒ Yes ☐ No
If yes, submit all of the following information:

- ☒ Description of current and previous land use and disturbances.
- ☒ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

Please note that for many projects an architectural and/or archaeological survey or other additional information may be needed to complete the Section 106 process.

DHR Comment/Finding Recommendation *This Space for Division of Historical Resources Use Only*

☐ Insufficient information to initiate review. ☑ Additional information is needed in order to complete review.

☐ No Potential to cause Effects ☐ No Historic Properties Affected ☐ No Adverse Effect ☐ Adverse Effect

Comments: Depending on decision to reconstruct or remove - area needs to be documented by cultural resource consultants - archaeology DHR requests meeting to discuss project

Above ground work may also be required. Please contact the DHR at your earliest convenience to set up a meeting to discuss project needs.

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized Signature: Edna Feighner Date: 8/20/13

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES
REQUEST FOR PROJECT REVIEW NARRATIVE

The purpose of this Narrative is to supplement information provided on the New Hampshire Division of Historical Resources (NHDHR) Request for Project Review (RPR) Form for Old Mill Pond Dam, Hampton, New Hampshire.

The Town of Hampton, NH (Town) is required to reconstruct or remove Old Mill Pond Dam under a Letter of Deficiency dated July 11, 2012 (LOD) issued by the New Hampshire Department of Environmental Services Dam Bureau (NHDES) to the Town. Presently, the Town is considering its alternatives to repair (reconstruct) or decommission (i.e. remove) the Dam.

The purpose of the RPR is to describe results of initial review into potential historical properties and inquire with NHDHR as to extent of further historical evaluation and/or coordination, if any, that would be needed to design and construct each of the two alternatives. Since the Project is in a preliminary stage, considering alternatives, a Lead Federal Agency has not yet been identified. The Lead Federal Agency will likely depend on the alternative selected and potential funding sources.

Project Area Description

Figures 1 through 3 show the location of Old Mill Pond Dam (Dam or Site) and Old Mill Pond (Pond or Impoundment), which together form the Project Area at this time. Photographs 1 through 3 show the Dam and Pond. The Dam impounds Nilus Brook to form Old Mill Pond. The Dam consists of an earth embankment retained by a downstream stone masonry wall with a stone masonry primary spillway and concrete auxiliary spillway. The dam is about 300 ft. long and 11.2 ft. high.

The Dam discharge flows through the main spillway, beneath a former mill known as The Old Grist Mill (inactive) immediately downstream of the spillway (described below), and continues to culverts under High Street about 50 ft. downstream of the mill. The auxiliary spillway is located on the left (looking downstream) embankment, but does not appear to have a defined discharge channel. A residential structure (No. 490 High Street) is located within 9 to 15 ft. downstream of the left embankment in the vicinity of the auxiliary spillway.

Historic Properties Review

The Old Grist Mill at No. 488-A High Street (aka Deacon Tuck Grist Mill, Tuck's Grist Mill, Leavitt-Tuck Grist Mill, Leavitt's Mill, High Street Grist Mill) is listed in NHDHR files as eligible for listing on the state and national register as a historic structure (shown in Table 1), is owned by the Town of Hampton Historical Society, and is considered a historic structure by the Town. According to information provided by the Hampton Historical Society (excerpts attached), a mill was originally constructed at or near the present location by John Tuck between 1686 and 1688. In 1815, a Mill at this Site was owned by Moses Leavitt who took down the old mill and built a new one in 1815. In 1961, fire destroyed a portion of the mill (noted as a shed) that was immediately upstream of the present Mill, and was overlying the present Dam spillway. This

area presently appears to be in disrepair and significantly eroded. The remaining portion of the Mill building was renovated in 1985.

While the information provided by the Hampton Historical Society describes history of the Mill in detail and suggests that a dam (and pond) was constructed in conjunction with the original mill, SA found no detailed descriptions of the Dam earlier than 1935 in files we reviewed from NHDES Dam Bureau, the Town Public Works Department, NHDHR, and the information provided by the Hampton Historical Society.

The residential structure to the left (looking downstream) of the Mill (No. 490 High Street) was likely constructed between 1959 and 1960[1]. The residential structure to the right (looking downstream) of the Mill (No. 488 High Street) was constructed in 2007. According to the Owner[2], a previous structure at similar location was demolished and the new house was constructed about 10 ft. further away from the Pond. The structure as 490 High Street is in the Project Area while the structure at 488 High Street is outside, but adjacent to, the Project Area.

Project Description

The Project Area at this time includes Old Mill Pond Dam, Old Mill Pond, the channel from the Mill to High Street, and the culvert under High Street as outlined on Figures 1 and 2. Each of the alternatives to repair or decommission the Dam will require significant earthwork. Regardless of the alternative selected, the Town would like to preserve, to the degree practicable, the existing Mill building. The design of each alternative will therefore incorporate this goal. The attached concept sketches show the repair and decommissioning options.

Reconstruction will include replacing the spillway with a concrete structure (shown on Sheet 3 of attached concept sketches) and one of several options to repair the embankments left and right (looking downstream) of the spillway. The embankment repair options include: a downstream embankment buttress (Alternative B, Sheet 1); a concrete structural wall with stone masonry facing (Alternative C, Sheet 1); and moving the crest upstream with several options for seepage cutoff, shown on Sheet 2 (Alternatives E, F, G). Regardless of the reconstruction alternative selected, existing stumps on the embankment will be removed and the embankment regraded. With respect to the existing stone masonry walls, Alternative B would bury or remove the walls; Alternative C would remove and reuse the stone masonry as wall facing; and Alternatives E, F and G would repair (remove and restack) portions of the walls, where necessary. Construction of the downstream embankment buttress of Alternative B would require demolition of the structure at 490 High Street, though this structure could remain for the other Alternatives. We anticipate that the Dam would likely be reconstructed to similar length to the existing Dam, though it may extend further upstream into the impoundment or downstream (greater width than present) and the height may increase on the order of 1 ft. The channel downstream of the Mill might be enlarged and the culvert beneath High Street may be replaced with a larger culvert.

If selected, decommissioning may include excavation to remove the current spillway and construct a stable stream channel upstream of the Mill, and excavation/dredging in the Pond to form a stream channel and to remove sediment from within that channel that may otherwise be washed downstream (Sheet 4 of attached

[1] According to Ms. Candice Stellmach, owner of 488 High Street and member of Hampton Historical Society, personal communication July 12, 2013. A photograph of the Mill provided by Ms. Stellmach is noted as 1960 and shows the residence at 488 High St.

[2] Personal communication with structure owner, Ms. Stellmach, July 12, 2013.

concept sketches). Stone masonry slope protection is needed upstream of the Mill to direct flows beneath the Mill. Much of the Dam embankment would likely remain, including much of the existing stone masonry walls. The structure at 490 High Street would likely remain. The Pond would be reduced to a stream channel under normal flows and the formerly-inundated areas of the impoundment would re-vegetate. The channel downstream of the Mill might be enlarged and the culvert beneath High Street may be replaced with a larger culvert.

List of Attachments

Figure 1 – Site Location Map
Figure 2 – Site Aerial Photograph
Figure 3 – Existing Site Plan
~~Concept Sketches, Sheets 1 through 4~~
Concept sketches included elsewhere in Report of Initial Study of Alternatives
Table 1 – Previously Surveyed or Listed Properties
RPR Form RPR Photo Log
Photographs
Excerpt of Joseph Dow's History of Hampton, NH, published 1893, provided by Ms. Candice Stellmach of Hampton Historical Society

Project: Number: 111-12-002 Sheet 1 of 1
Name: Old Mill Pond Dam, State ID No. 105.03
Hampton, New Hampshire

Original Work:
By: N. Olson Date: July 1, 2013 Subject: **FIGURE 1 - Site Location Map**
Checked By: JET Date: July 12, 2013

Excerpt of USGS 7.5 minute quadrangle, Hampton, NH.

Note: Project Area sketched based off of Project Area shown on Figure 2 - Aerial Photograph

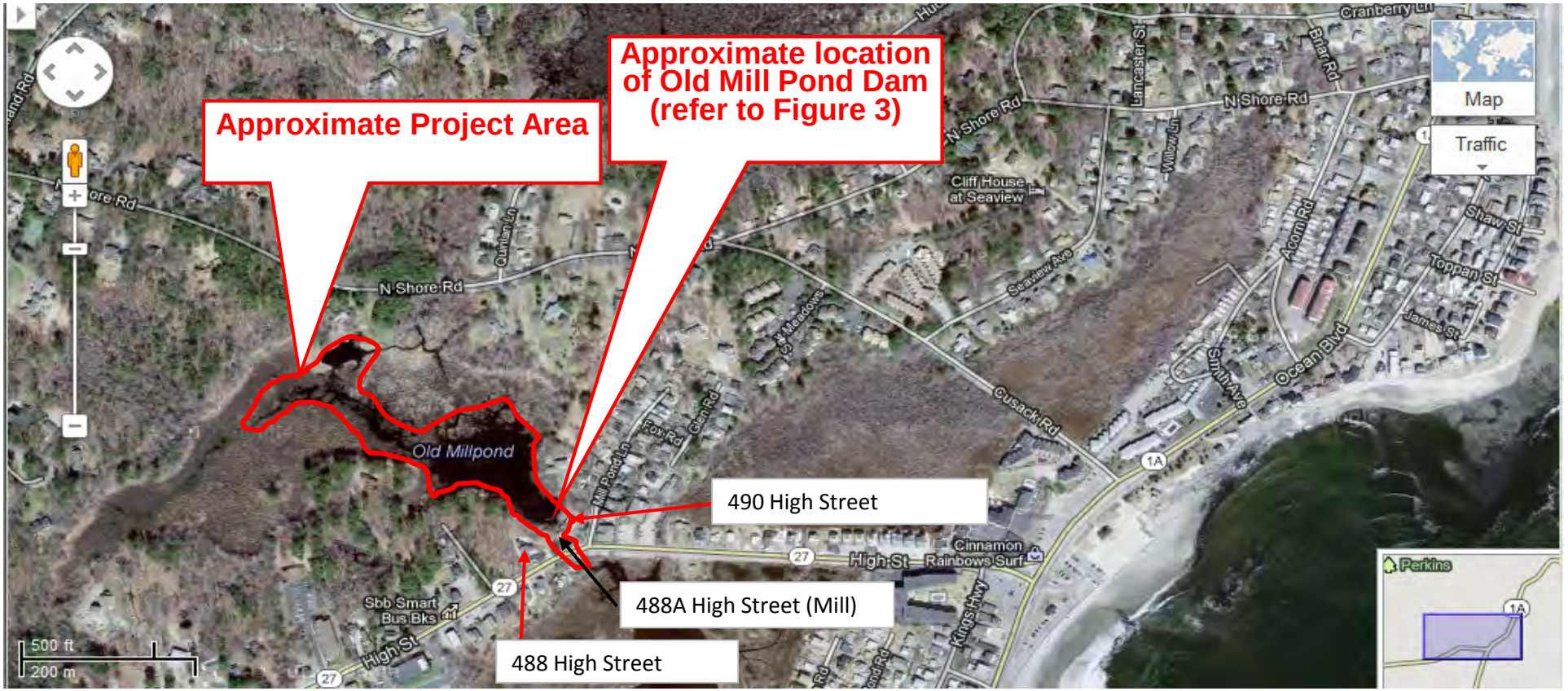
Revisions:
By: Date:
By: Date:

Stephens Associates Consulting Engineers
Structural Geotechnical Hydrology & Hydraulics
www.stephensengineers.com 60 Northrup Drive, Brentwood, NH 03833 (603) 772-1417

Project: Number: 111-12-002 Sheet 1 of 1
Name: Old Mill Pond Dam, State ID No. 105.03
Hampton, New Hampshire

Original Work:
By: N. Olson Date: July 1, 2013
Checked By: JET Date: July 12, 2013

Subject: **Figure 2 - Site Aerial Photograph**



Source: www.maps.google.com, accessed March 18, 2013

Revisions:
By: _____ Date: _____
By: _____ Date: _____

SACE 00-1 (v. 1) 1/00

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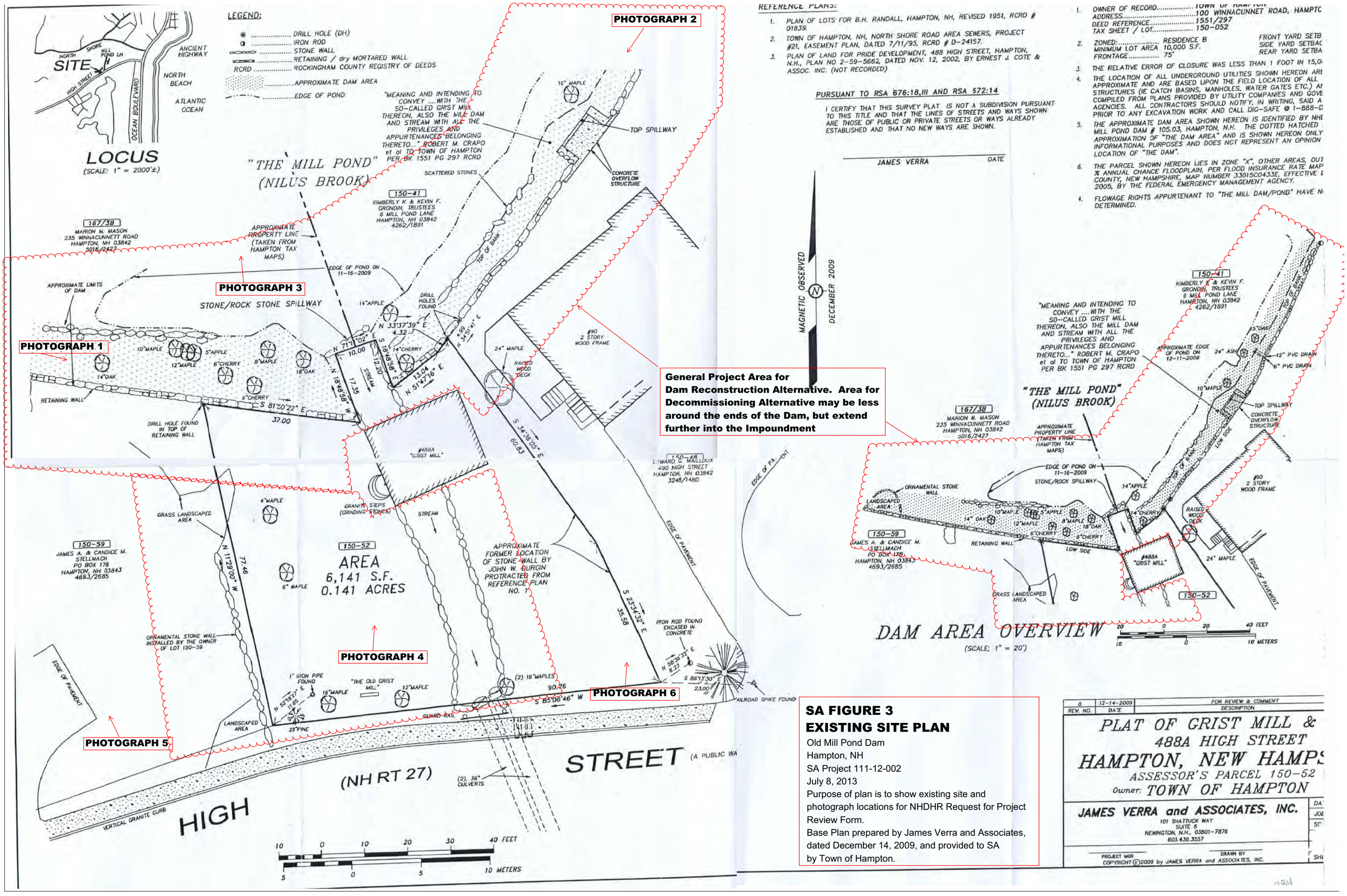

SA FIGURE 3
EXISTING SITE PLAN

Old Mill Pond Dam
Hampton, NH
SA Project 111-12-002
July 8, 2013
Purpose of plan is to show existing site and photograph locations for NHDHR Request for Project Review Form.
Base Plan prepared by James Verra and Associates, dated December 14, 2009, and provided to SA by Town of Hampton.

REV. NO.	DATE	DESCRIPTION
0	12-14-2009	FOR REVIEW & COMMENT

PLAT OF GRIST MILL & 488A HIGH STREET
HAMPTON, NEW HAMPS
ASSESSOR'S PARCEL 150-52
Owner: TOWN OF HAMPTON

JAMES VERRA and ASSOCIATES, INC.
101 SHATTUCK WAY
SUITE 6
NEWINGTON, N.H., 03801-7876
603.436.3557

PROJECT MGR DRAWN BY

Project and Number and/or Project Title: Old Mill Pond Dam Initial Study of Alternatives				DHR R&C #:
RPR Table 1: PREVIOUSLY SURVEYED OR LISTED PROPERTIES				
NH DHR Property Name / Historic District Name	NH DHR Inventory #	National Register-listed, Eligible, or Not Eligible	Date of Determination (mm/dd/yy)	National Register Criteria of Significance (if applicable)
Deacon Tuck Grist Mill, 488-A High Street	HAM0045	Eligible	8/22/12	A/C[1]
**Add rows as necessary				

Prepared July 11, 2013

[1]A/C designation listed on NHDHR "Record of NHDHR Determination of Eligibility Decisions – by Town" printed by NHDHR on July 11, 2013 under column for "Criteria"

Name and Number and/or Project Title: Old Mill Pond Dam Initial Study of Alternatives	DHR R&C #:

RPR Form RPR PHOTO LOG	
Photo #	NH DHR Inventory # or Property Street Address; Include a brief description of the photograph if necessary.
1	Old Mill Pond Dam – left embankment
2	Old Mill Pond Dam – right embankment
3	Old Mill Pond
4	The Old Grist Mill, located immediately downstream of Dam spillway (488A High Street)
5	Structure on abutting property west of Dam (488 High Street)
6	Structure on abutting property east of Dam (490 High Street)
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
	**Add rows as necessary.

Prepared July 12, 2013

Project: Number: 111-12-002 Sheet 1 of 5
Name: Old Mill Pond Dam, NHDES No. 105.03
Hampton, NH

Original Work:
By: N. Olson Date: July 1, 2013 Subject: **Photographs**
Checked By: JET Date: July 12, 2013

Photo Number: 1	Dam left (looking downstream) embankment viewed from near left end. No. 490 High St. in foreground; Old Grist Mill 488-A High Street in middle; No. 488 High St. photo right/background.
Description:	
Photo Date: June 6, 2013	

Photo Number: 2	Dam right (looking downstream) embankment viewed from near right end. Old Grist Mill in middle; No. 490 High St. to photo left.
Description:	

Photo Date: June 6, 2013

Revisions:
By: Date:
By: Date:

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www.stephensengineers.com 60 Northrup Drive, Brentwood, NH 03833 (603) 772-1417

Original Work:
By: N. Olson Date: July 1, 2013
Checked By: JET Date: July 12, 2013

Photo Number:	**3**	Overview of Old Mill Pond from Dam, looking upstream
	Description:	

Photo Date: June 1, 2013

Revisions:
By: Date:
By: Date:

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Project: Number: 111-12-002 Sheet 3 of 5
Name: Old Mill Pond Dam, NHDES No. 105.03
Hampton, NH
Subject: **Photographs**

Original Work:
By: N. Olson Date: July 1, 2013
Checked By: JET Date: July 12, 2013

Photo Number:	**4**
Description:	The Old Grist Mill, located downstream of Dam spillway (488A High Street). No. 490 High Street in background.

Photo Date: May 1, 2013

Revisions:
By: Date:
By: Date:

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Original Work:
By: N. Olson Date: July 1, 2013
Checked By: JET Date: July 12, 1013

Photo Number:	**5**	Structure on abutting property west of Dam (488 High Street)
	Description:	

Photo Date: October 1, 2008

Image from maps.google.com, obtained by SA on July 1, 2013.

Revisions:
By: Date:
By: Date:

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Project: Number: 111-12-002 Sheet 5 of 5
Name: Old Mill Pond Dam, NHDES No. 105.03
Hampton, NH
Subject: **Photographs**

Original Work:
By: N. Olson Date: July 1, 2013
Checked By: JET Date: July 12, 2013

Photo Number:	**6**
Description:	Structure on abutting property east of Dam (490 High Street)

Photo Date: October 1, 2008

Image from maps.google.com, obtained by SA on July 1, 2013.

Revisions:
By: Date:
By: Date:

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Nilus River Mills

James Johnson's Grant

On the 19th of April, 1679, "upon the motion of James Johnson, the town gave him liberty to set up a grist and fulling mill upon Nilus River, and to make a convenient dam or dams, provided he shall not draw down water in hay-time to damnifie any man's meadow or hay that lies upon y^{e} meadows upon that river in any place below; upon the penalty of hone hundred pounds; provided also, that if the said mill be not built and finished within two years, then his grant is to be void, and the land to remain as it now is, in the hands of the town."

Tuck's Mills

At a town meeting, September 17, 1686, upon motion of John Tuck, the town voted to give him liberty to set up a grist and fulling mill on Nilus river, on conditions precisely like those imposed on James Johnson, seven years before; whence it seems probable that Johnson did not build. The gristmill was built, and perhaps a fulling-mill; but it was soon found that the water power was not sufficient to run the two mills by the same dam; for, at a town meeting, November 14, 1689, Mr. Tuck was allowed to make a dam where Nilus comes out of Hasica meadow, [Properly, *Hassocky meadow*:p. 146, note.] and set up his fulling-mill there on nearly the same conditions as his former grant, the mill to be fit to go and to full cloth in two years; and he was not to full cloth, nor draw down water to do damage in hay time. The mill was built a few rods west of the road leading to Little River village, in what is now called the *dam-pasture*; and was afterwards owned by Lieut. William Stanford. It has been gone many years; but traces of the dam remained in 1867, when it was rebuilt, and a shingle mill erected and put in operation. This has since been taken down.

Nilus river, or brook, did not at all seasons furnish sufficient water to keep the gristmill in operation, and another grant was afterward [December 29, 1709] made to Mr. Tuck, allowing him, so far as the town had a right to do it, to turn the springs near where Thomas Sleeper formerly lived, [On Shaw's Hill.] and also the spring at Alder meadow, [p. 146. note.] into the pond by his gristmill, for the term of twenty years, provided that he should improve every opportunity to grind corn for the inhabitants of the town for the sixteenth part thereof; and further engage to grind three days in a week, when there was sufficient water. On the town's part it was agreed, that, if there should be a further grant of these springs after the expiration of twenty years, Mr. Tuck should have the offer of them on as favorable terms as any other person.

The springs first named are those in the tract of ground known as "Spring-heads," lying between Nook Lane and the Little River road. The natural outlet of these springs is through the Nook run

into Dow's river; but by means of a dam, usually called the foot-dam, across this outlet near the springs, the water is easily turned into the mill pond already mentioned.

From Alder meadow there were originally two outlets. Nilus brook, which runs easterly through the meadow, carries off the water from most of the springs; but those in the north part of the meadow had an outlet running northerly into Little river, which is less than half a mile distant from the meadow. By a dam across this outlet, the water from *all* the springs could be turned into Nilus brook, and made serviceable to any mills farther down that stream. The dam constructed at this place was called the *little dam*; and, though the dam itself has long been gone, the place where it was built, and the land near it still bear that name.

In 1735 the proprietors of the First Division voted, "that the water of Sleeper's Spring shall half run down the natural way to where carts go over the Nook Run, and the other half run into Tuck's ditch to the pond, forever; and none who hereafter have the lots the springs run through shall ever hinder the same."

Early in the present century, Tuck's gristmill had come into the possession of Reuben Lamprey, who sold it to Moses Leavitt. In 1815 Mr. Leavitt took down the old mill, which had become dilapidated, and built a new one, which he and his sons operated. Subsequently, Mr. Leavitt gave the mill to his eldest son, Jonathan, whose widow controlled it till her death, in 1885. It is now owned by Mr. Joel Jenkins, a summer resident, as a part of his estate, and is not in use.

Dam Pasture Mill

On the 4th of September, 1693, at the same time with the grants for two of the Little River mills, another grant for a sawmill was made, on like conditions, to several persons combined together for the purpose of building and operating a mill on Nilus brook, between Alder meadow and Bear swamp. Their mill was built in the *Dam pasture* -- then considered as a part of Bear swamp -- and stood a little eastward of the wall between this pasture and the Twelve Shares, a few rods from the place where Nilus issues from Alder meadow. Though no traces of any mill or dam can now be discovered, and nothing to show their exact situation, yet some aged persons, who have died within the last thirty years, well remembered when the paths from the different parts of the woodland around, all tending towards the same spot, plainly indicated the locality of the old mill-yard. Dea. Jeremiah Hobbs, two or three years before his death, at the age of ninety, in 1863, pointed out the site of the mill and dam, as above indicated.

TOWN AFFAIRS -- KINGSTON, 1680-1707

MARSHES DIVIDED INTO SHARES

We shall now resume our narrative of *town affairs*, from the close of Chapter III, where it had been brought down to the time when a royal government was about to be established in New Hampshire.

James Turner

From: Feighner, Edna <Edna.Feighner@dcr.nh.gov>
Sent: Friday, September 13, 2013 1:06 PM
To: James Turner
Cc: knoyes@town.hampton.nh.us; Chris Jacobs; Loiselle, Deborah S.; Robert Stephens; Peterson, Nadine; St.Louis, Christina
Subject: RE: Old Mill Pond Dam meeting with NHDHR

Chris,

We wanted to take a moment to thank you for meeting with us this morning. As was discussed, of course from the historic resource side, the best course of action for the resource would be to avoid the mill and raceway completely and make a break in another area. We certainly understand that if the town's purchase of the adjacent property is accomplished then perhaps the real flooding issue might be addressed and the dam and mill left without impacts. An individual inventory form of the dam, mill and any associated features should be completed by an architectural historian along with the archaeological assessment conducted by a qualified archaeologist. Both of these assessments should be conducted by qualified consultants found on our website at www.nh.gov/nhdhr

Thanks again, if there are any questions please feel free to get in touch.

Edna

Edna Feighner
Review and Compliance Coordinator/Historical Archaeologist
NH Division of Historical Resources
19 Pillsbury Street, Second Floor
Concord, NH 03301
603-271-2813

About the New Hampshire Division of Historical Resources:
The New Hampshire Division of Historical Resources was established in 1974 as the "State Historic Preservation Office." The historical, archaeological, architectural and cultural resources of New Hampshire are among its most important environmental assets. Historic preservation promotes the use, understanding and conservation of such resources for the education, inspiration, pleasure and enrichment of New Hampshire's citizens. For more information, visit us online at www.nh.gov/nhdhr or by calling (603)271-3483.

From: James Turner [mailto:jeturner@stephensengineers.com]
Sent: Friday, September 06, 2013 1:16 PM
To: Feighner, Edna
Cc: knoyes@town.hampton.nh.us; Chris Jacobs; Loiselle, Deborah S.; Robert Stephens
Subject: Old Mill Pond Dam meeting with NHDHR

Hi Edna,

Per our telephone conversation and as requested in the RPR No. 5068 review, we would like to meet with you and Nadine to discuss the Old Mill Pond Dam Project in Hampton. We would like to meet in Hampton next week on Wednesday (any time), Thursday (any time), or Friday (morning before 11 am). Please let us know your availability. Thanks,

Jim

James E. Turner, PE

APPENDIX D

CORRESPONDENCE WITH NHDES AND NATURAL HERITAGE BUREAU

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668 Main Street, Suite 250
Wilmington, MA 01887
Phone: (978) 988-2115
Fax: (978) 988-2117
ASFE PEER REVIEWED 2007

April 12, 2013 SA Project File 111-12-002

Department of Public Works
Town of Hampton
11 Hardardt's Way
Hampton, NH
Attention: Mr. Chris Jacobs, PE

Re: Initial Research for Potential Decommissioning Funds
Old Mill Pond Dam, State ID No. 105.03
Hampton, New Hampshire

Ladies and gentlemen:

Stephens Associates Consulting Engineers, LLC (SA, we, our, or us) performed initial research for possible funding sources to decommission Old Mill Pond Dam on Nilus Brook in Hampton, NH (should the Town determine to do so) at the request of Messrs. Keith Noyes and Chris Jacobs, PE, of the Department of Public Works, Hampton, New Hampshire (Town, Owner, Client, you, your, etc.). Our initial research consisted of contacting the New Hampshire Department of Environmental Services (NHDES) River Restoration Coordinator. The purpose of this letter is to summarize results of this contact.

The Town received a Letter of Deficiencies from the State of New Hampshire Department of Environmental Services (NHDES), Dam Bureau, dated July 12, 2012, requiring the Town to repair or decommission the Dam. Mr. Robert S. Stephens, PE, PG of SA met with Messrs. Noyes and Jacobs on November 8, 2012 to discuss the Dam and potential funding sources for decommissioning. During the meeting, the Messrs. Noyes and Jacobs were clear that the Town was not favoring decommissioning, but that the Town needed to weigh its options in due diligence.

At the Town's request, SA met with Ms. Deborah Loiselle, NHDES River Restoration Coordinator to inquire of potential governmental, non-governmental and partnering funding sources for river restoration/dam decommissioning, on November 13, 2012. Ms. Loiselle expressed her belief that the Old Mill Pond Dam would likely be a strong candidate for available funding due to it's coastal proximity. She asked for some additional information, including photographs and observations of the downstream drainage structures. SA visited the Dam and downstream drainage structures to photograph and observe them, and provided the information to Ms. Loiselle by email on December 10, 2012.

SA spoke to Ms. Loiselle in follow-up to the information provided. She indicated the following:

- Unfortunately, the prospects of obtaining funding for projects such as Old Mill Pond Dam are not as plentiful as they once were. Regardless, such funding, when available, can often be used for feasibility studies, evaluation, design, and/or permitting as well as construction.

- The Environmental Protection Agency (EPA) has EPA 319 Grants available for impaired waters. Neither Nilus Brook nor the impoundment of Old Mill Pond are currently on the list of New Hampshire impaired waters, however; Ms. Loiselle indicated that she may be able to put a plan of study (monitoring) together with funding to see if the waters should be added to the list and thereby become eligible for EPA 319 funding. Ms. Loiselle indicated that Ms. Sally Soule, Coastal Watershed Supervisor of the NHDES Watershed Assistance Section, would be a good source of assistance to the Town in investigation and/or pursuit of EPA 319 Grants and river restoration funds/projects in the Coastal Communities like Hampton.

- The National Oceanic and Atmospheric Administration (NOAA) has been a strong supporter of river restoration efforts, however, due to funding constraints will be providing no river restoration project funding for the next 3 years. NOAA normally partners with other private and quasi-private organizations such as American Rivers; Gulf of Maine Council; etc. While NOAA funding is unavailable, the ability of such organizations to fund/partner will be greatly reduced.

- The State of New Hampshire Department of Fish & Game (NHF&G) may be very interested in funding and/or assisting with a restoration of Nilus Brook by decommissioning Old Mill Pond Dam.

SA did not directly contact the potential sources suggested by Ms. Loiselle as it was our understanding from our November meeting that the Town is concerned about the sensitivity of the matter of decommissioning and wanted to weigh the information provided in this letter prior to continuing funding research through contact with other parties.

We recommend the Town authorize SA to inquire with NHF&G and with Ms. Sally Soule of NHDES. Further, we recommend contacting American Rivers and the Gulf of Maine Council for additional options. SA is ready to continue its research at the Town's request.

SA trusts that this letter is sufficient to meet your current needs. If you have any questions, or require clarification, please call us.

Sincerely,
Stephens Associates Consulting Engineers, LLC

Robert S. Stephens, PE, PG
Principal Engineer

RSS:tgbg

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Nathaniel Olson, Stephens Associates Consulting Engineers, LLC
60 Northrup Drive
Brentwood, NH 03833

From: Melissa Coppola, NH Natural Heritage Bureau
Date: 8/8/2013 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB13-2402 Town: Hampton Location: Tax Maps: Map 131, lot 12; Map 150, lots 41,48,52,59; Map 167, lot 3b

Description: The Project is a study of alternatives for Old Mill Pond Dam, Hampton, NH. The Town, which owns the dam, is considering reconstruction or decommissioning. The purpose of this DataCheck is to evaluate the potential for rare species and exemplary natural communities in the vicinity of the Dam and impoundment (Old Mill Pond). The project is not applying for permits in this phase, but will apply for permits in a later phase, once an alternative is selected

cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Plant species	**State[1]**	**Federal**	**Notes**
swamp rose-mallow (*Hibiscus moscheutos*)	E	--	This species grows in dry dune systems and is sensitive to disturbances that eliminate its habitat or disturb the natural dynamics of the dune area.

Vertebrate species	**State[1]**	**Federal**	**Notes**
Willet (*Catoptrophorus semipalmatus*)	SC	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

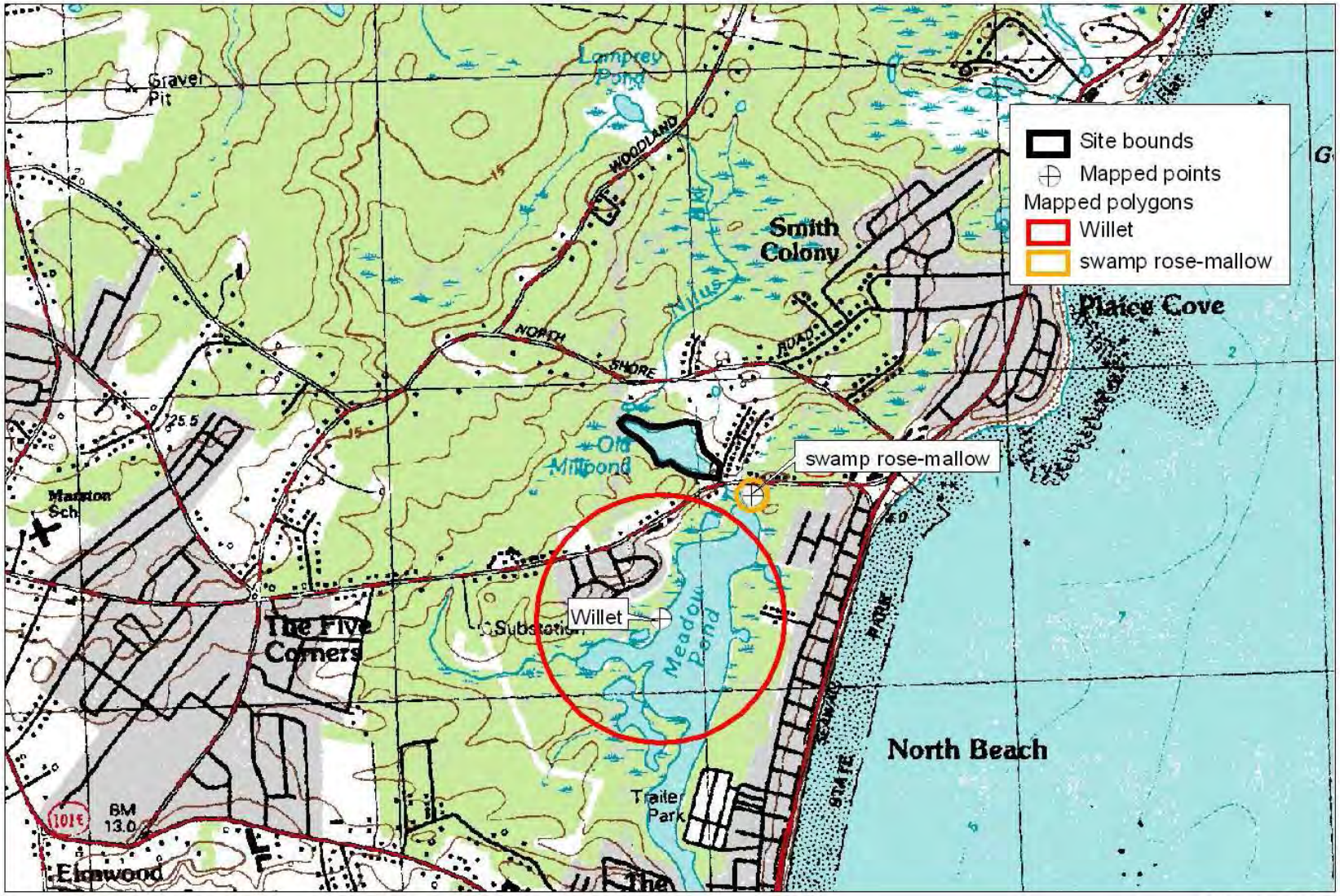
DRED/NHB
PO Box 1856
Concord NH 03302-1856

NHB13-2402

NH Natural Heritage Bureau

Known locations of rare species and exemplary natural communities

Note: Mapped locations are not always exact. Occurrences that are not in the vicinity of the project are not shown.



*Historical record

1:18000

Valid for one year from this date: 08 Aug 2013

New Hampshire Natural Heritage Bureau - Plant Record

swamp rose-mallow (*Hibiscus moscheutos*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Not ranked
Comments on Rank:	
Detailed Description:	2004: About 30 stems, the largest ca. 1.5 m tall, in two areas (3x6 m and 2x10 m). Some stems connected by a central underground perenniating organ.2003: Flowering and fruiting plants seen.
General Area:	2004: Brackish marsh adjacent to a tidal pond. Growing with *Spartina pectinata* (fresh-water cordgrass) in a low, wet area (probably on fill brought in decades ago to support a pump house in the marsh), just above the spring-tide range. Area invaded by *Lythrum salicaria* (purple loosestrife) and *Phragmites australis* (common reed), both of which are shading the *Hibiscus* plants.
General Comments:	
Management Comments:	2004: The site is undergoing restoration (removal of *Phragmites*): the contractor knows to avoid the *Hibiscus* areas. Tidal hydrology was restored to the site in 1995, when larger culverts were installed at the inlet to the pond.

Location

Survey Site Name:	Meadow Pond, north end		
Managed By:	SPNHF Saltmarsh - Penniman		
County:	Rockingham	USGS quad(s):	Hampton (4207087)
Town(s):	Hampton	Lat, Long:	425628N, 0704757W
Size:	1.9 acres	Elevation:	

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: From the intersection of Routes 1A and 27, go ca. 200 m west on Rte. 27 to a sewer pumphouse. Park on lot and see plants to south and west of cut grass.

Dates documented

First reported:	2003-09	Last reported:	2004-08-27

New Hampshire Natural Heritage Bureau - Animal Record

Willet (*Catoptrophorus semipalmatus*)

Legal Status

Federal: Not listed
State: SC

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Not ranked (need more information)

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 1997: 2 territorial pairs.
General Area:
General Comments:
Management Comments:

Location

Survey Site Name: Meadow Pond
Managed By: Birch Rd. Marsh

County: Rockingham
Town(s): Hampton
Size: 123.5 acres

USGS quad(s): Hampton (4207087)
Lat, Long: 425615N, 0704810W
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions:

Dates documented

First reported: 1997-05-10
Last reported: 1997-05-10

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

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Fax: (603) 772-1418
668 Main Street, Suite 250
Wilmington, MA 01887
Phone: (978) 988-2115
Fax: (978) 988-2117
ASFE PEER REVIEWED 2007

August 7, 2013 SA Project File 111-12-002

New Hampshire Department of Environmental Services
Water Division, Dam Bureau
Attn: Ms. Deborah Loiselle
River Restoration Coordinator
29 Hazen Drive
Concord, NH 03302-0095

Re: Old Mill Pond Dam Initial Study of Alternatives – Sediment Review
State ID No. 105.03
Hampton, New Hampshire

Dear Ms. Loiselle:

The Town of Hampton, NH (Town) engaged Stephens Associates Consulting Engineers, LLC (SA, we, our, or us) to study repair and decommissioning alternatives for Old Mill Pond Dam (Dam). One consideration affecting potential decommissioning is quality and quantity of sediment that may require removal and disposal. The purpose of this letter is to describe our initial evaluation of quality and quantity of sediment that could require removal, and to solicit review and response from NHDES as to potential requirements for further sediment evaluation, if any, should the Town elect to pursue decommissioning.

The Town is required to reconstruct or remove the Dam under a Letter of Deficiency dated July 11, 2012 (LOD) issued by the New Hampshire Department of Environmental Services (NHDES) Dam Bureau to the Town. Presently, the Town is considering its alternatives of repair (reconstruction) and decommissioning.

Figures 1 and 2 show Old Mill Pond Dam and the impoundment (Old Mill Pond) locations. Figure 3 shows the drainage area. Based on SA's historical review, a mill was originally constructed at or near the present location between 1686 and 1688 and was subsequently demolished and rebuilt in in 1815. While the historical information describes history of the Mill in detail and suggests that a dam (and pond) was constructed in conjunction with the original mill, SA found no detailed descriptions of the Dam earlier than 1935.

Sediment Quantity

We estimate on the order of 3,000 cubic yards of sediment may require removal if the Town elects to decommission the Dam. This estimate of quantity is based on an assumed excavation of a trapezoidal channel extending from the upstream edge Mill building (at the downstream toe of the Dam) to a small pond near the upstream end of the impoundment (sketched in Figure 2), a bottom width of 10 ft., 2H:1V (horizontal to vertical) side slopes, SA's preliminary measurements of Pond bottom elevation (described below), and engineering judgment.

SA preliminary measured Pond bottom elevations at selected locations during elevation survey of the Dam[1]. Based on penetration of the survey rod below the mud-line to a "firm" bottom, we measured between trace and 4 ft. of unconsolidated sediment. Mud-line elevations ranged between 12.4 and 15.7 ft. (NGVD 1929) with "firm" bottom elevations from about 11.5 to 14.7 ft.. Comparison of elevations at the Dam toe (about El. 8), spillway (about El. 15) and impoundment indicate top of mud-line elevations 6 to 8 ft. above the stream channel elevation at the Dam toe. This could suggest sediment of 6 to 8 ft. thick unless bedrock is present in the stream channel near the Mill, in which case sediment thickness would be less.

SA obtained three samples of sediment near the surface of the Pond bottom. Based on visual evaluation, the samples consisted of muck/Peat. When probing the impoundment bottom with the survey rod to evaluate elevations, we noted that the rod occasionally contacted boulders. Historical aerial and ground-level photographs show frequent low water levels resulting in significantly smaller impoundment area with large portions of the impoundment exposed. Figure 4 shows photographs of the impoundment circa 1957 substantially drained. Based on the photographs, the impoundment bottom, where drained, appears to be consist of leaves and a soil surface that appears consistent with the sample description of muck/Peat.

Sediment Quality

SA evaluated the potential for water and soil contaminant sources upstream of the impoundment by review of databases maintained by US Environmental Protection Agency (EPA)[2] and New Hampshire Department of Environmental Services (NHDES)[3] and review of aerial photographs for land uses that may include fertilizers and/or pesticides (e.g. agricultural, golf courses) within the drainage area.

We did not note golf courses or large-scale agricultural uses, which could be associated with large quantities of fertilizer/pesticide use, within the upstream drainage area based on our review of aerial photography. The NHDES One-Stop database indicated the following records within the drainage area, and excerpts from the database for these records are attached:

Address	Classification	Location in Drainage Area
17 Barbour Road, Hampton	Underground Storage Tank Facility, Leaking Underground Storage Tank, Underground Injection Control, Hazardous Waste Generator	Upstream of Ice Pond (aka Lamprey Pond)
195 Woodland Road, Hampton	Underground Injection Control	Upstream of Ice Pond (aka Lamprey Pond)
7 Little River Road, Hampton	On-premise Use Facility Containing Fuel Oil	Upstream of Ice Pond (aka Lamprey Pond)

We reviewed a report prepared by the US EPA for the New Hampshire Estuaries Project of the National Coastal Assessment[4] that evaluated sediment quality, including toxicity, contaminants and total organic

[1] Our survey measurements of Pond bottom elevation were intended for preliminary estimating of sediment quantity and not intended to plot Pond bathymetry.
[2] US Environmental Protection Agency (EPA), "Envirofacts," One-stop source for environmental information, http://www.epa.gov/enviro/index.html, accessed by SA on July 3, 2013
[3] New Hampshire Department of Environmental Services (NHDES) (2013) "OneStop," searchable database of environmental information compiled by NHDES, http://des.nh.gov/onestop/index.htm, accessed by SA on July 3, 2013
[4] US Environmental Protection Agency (2007) "National Estuary Program Coastal Condition Report, Chapter 3: Northeast National Estuary Program Coastal Condition, New Hampshire Estuaries Project."

carbon, in Hampton-Seabrook Harbor, located downstream of Meadow Pond, which is downstream of Old Mill Pond Dam. The report indicates sediment quality as "good" on a three-tier rating system of poor-fair-good.

Based on our review described above, we found few potential sources of contamination, and those sources found are located upstream of Ice Pond (aka Lamprey Pond) and a large wetland (Smith Wetland), each upstream of Old Mill Pond. In our opinion, significant contamination from these sources that would settle into sediments, if any, would be more likely located in the sediments of Ice Pond (aka Lamprey Pond) or Smith Wetland rather than Old Mill Pond. In our opinion, the likelihood is low for contaminated soils in the impoundment that will require removal.

We request NHDES review of the information summarized in this letter and request response as to whether more detailed sampling and environmental testing of impoundment sediments will be required if the Town elects to pursue decommissioning.

Please contact us if you have any questions.

Sincerely,
Stephens Associates Consulting Engineers, LLC

James E. Turner
Project Manager

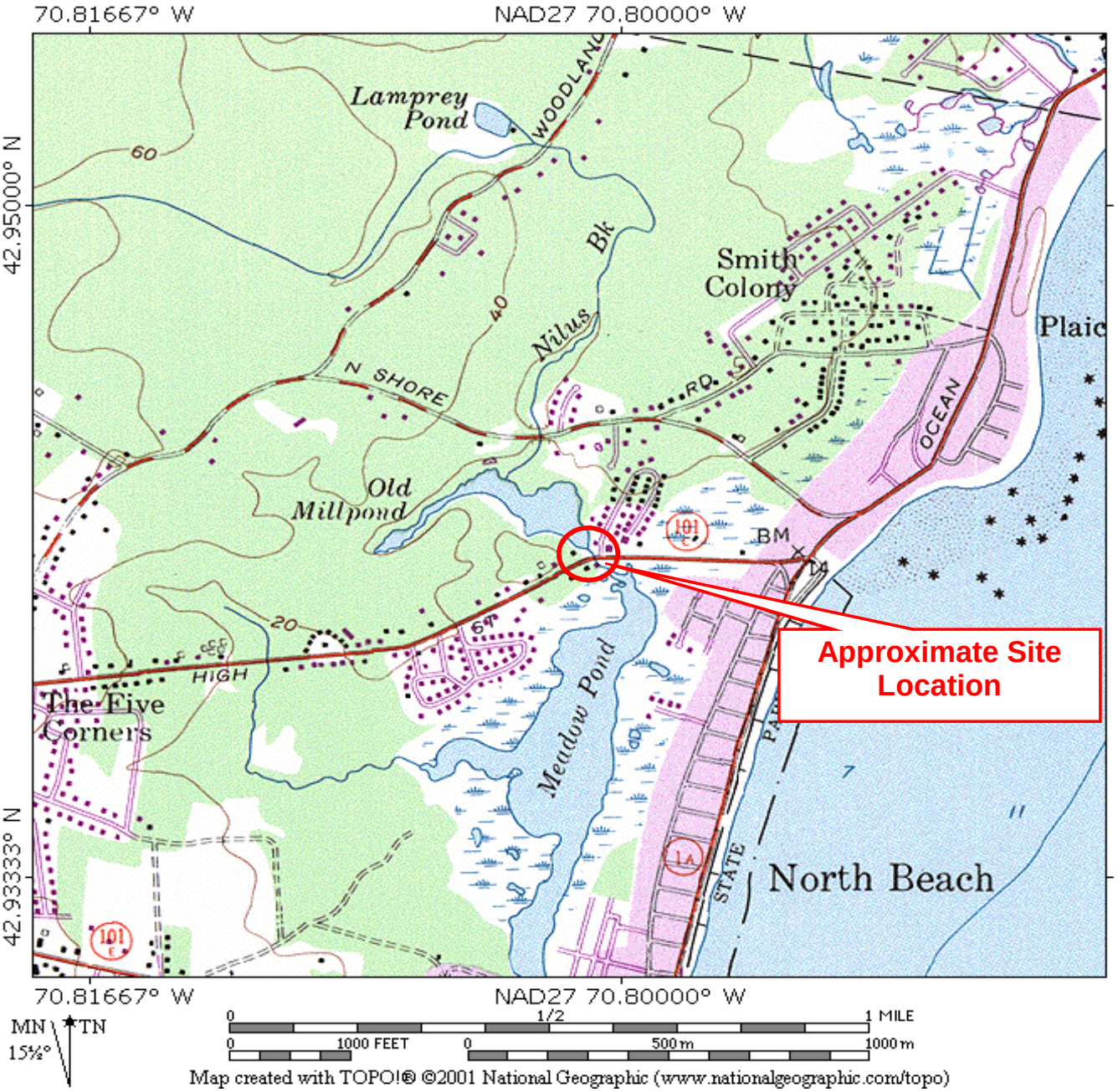
Robert S. Stephens, PE
Principal

Attachments:

Figure 1 – Site Location Map
Figure 2 – Site Aerial Photograph
Figure 3 – Drainage Area
Figure 4 – Historical Photographs
NHDES One-Stop Records: 17 Barbour Road, Hampton; 195 Woodland Road, Hampton; 7 Little River Road, Hampton;

Project: Number: 12-035 Sheet 1 of 1
Name: Old Mill Pond Dam, State ID No. 105.03
Hampton, New Hampshire

Original Work:
By: J. Turner Date: March 18, 2013 Subject: **FIGURE 1 - Site Location Map**
Checked By: Date:



Excerpt of USGS 7.5 minute quadrangle, Hampton, NH.

Revisions:
By: Date:
By: Date:

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Insightful, Cost-saving Solutions for Buildings and Infrastructure
Structural Geotechnical Hydrology & Hydraulics
www.stephensengineers.com 60 Northrup Drive, Brentwood, NH 03833 (603) 772-1417

Project: Number: 111-12-002 Sheet 1 of 1
Name: Old Mill Pond Dam, State ID No. 105.03
Hampton, New Hampshire

Original Work:
By: N. Olson Date: July 1, 2013
Checked By: JET Date: July 29, 2013

Subject: **Figure 2 - Site Aerial Photograph**

Source: www.bing.com/maps, accessed 7/1/2013

Revisions:
By: _____ Date: _____
By: _____ Date: _____

SACE 00-1 (v. 1) 1/00

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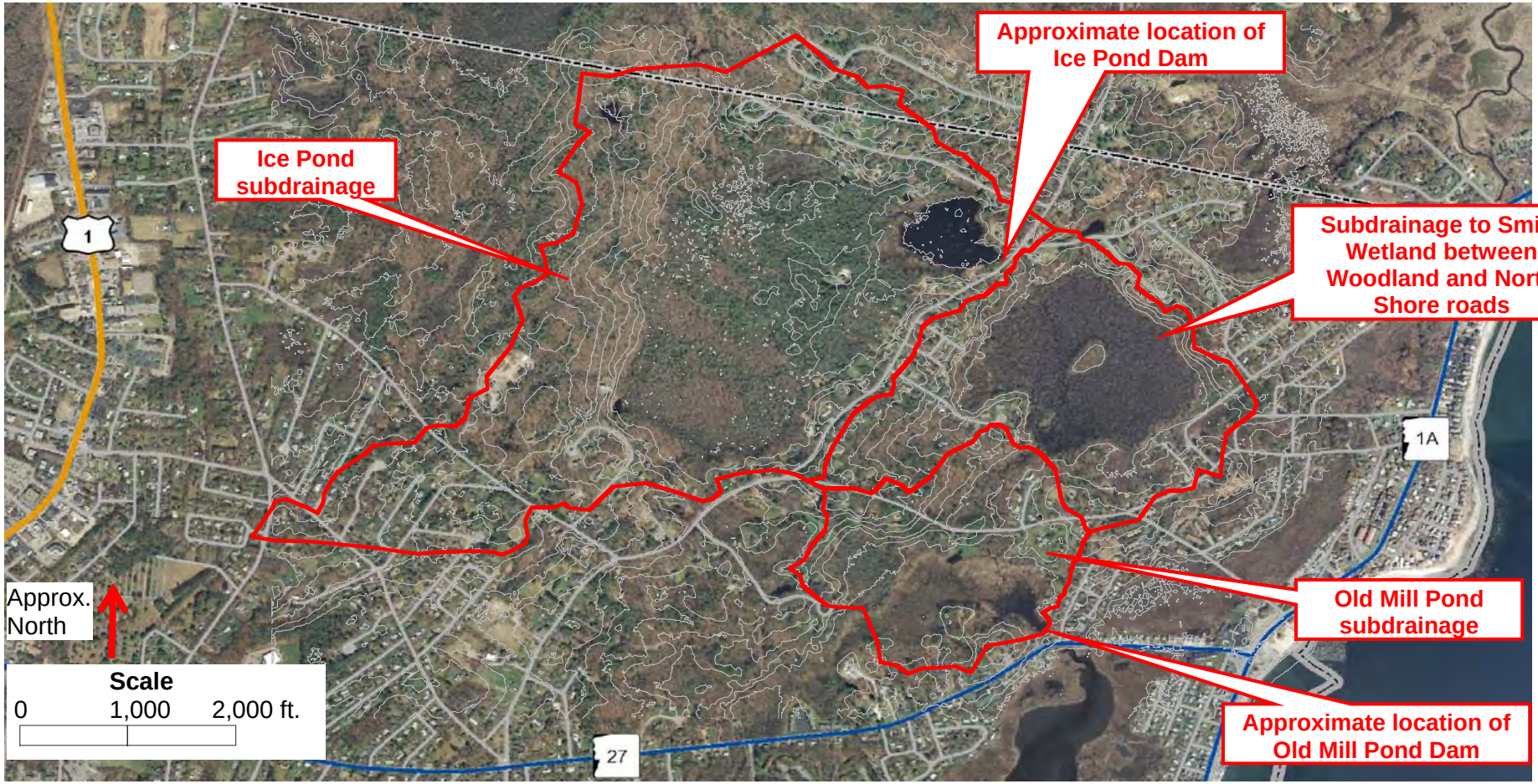
Structural
Geotechnical
Hydrology & Hydraulics
60 Northrup Drive, Brentwood, NH 03833 (603) 772-1417

Project: Number: 111-12-002 Sheet 1 of 1
Name: Old Mill Pond Dam, State ID No. 105.03
Hampton, New Hampshire

Original Work:
By: NAO Date: August 7, 2013
Checked By: JET Date: August 7, 2013

Subject: **Figure 3**
Old Mill Pond Dam Drainage Area



NOTES:
1. Aerial photograph from GRANITView, granitview.unh.edu, accessed by SA on July 17, 2013. GRANIT indicates photograph taken in 2010.
2. Topographic contours at 5 ft. intervals produced by AutoCAD Civil 3D using LiDAR data from USGS EarthExplorer, earthexplorer.usgs.gov, acessed by SA on July 2, 2013.
3. Drainage area and subdrainages delineated by SA based on topographic contours, aerial photography and engineering judgment.
4. Topography/drainage areas overlaid/scaled on aerial photograph manually by SA, based on visual correlation with land features (e.g. Ice Pond, Old Mill Pond, etc.).

Revisions:
By: _____ Date: _____
By: _____ Date: _____

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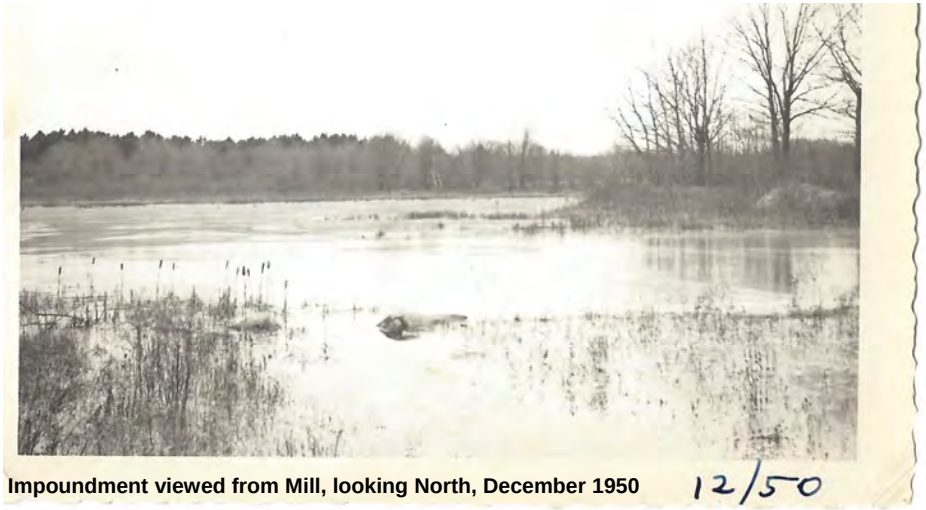
Project: Number: 111-12-002 Sheet 1 of 1
Name: Old Mill Pond Dam, State ID No. 105.03
Hampton, New Hampshire

Original Work:
By: JET Date: July 30, 2013
Checked By: Date:

Subject: **Figure 4**
Historical Photographs

Mill viewed from Impoundment, looking South, August 1957 8/57

Impoundment viewed from Mill, looking North, August 1957 8/57



Impoundment viewed from Mill, looking North, December 1950 12/50

Impoundment viewed from North Shore Road, looking South, March 1959

Photographs and captions provided by Ms. Candice Stellmach of Hampton Historical Society

Revisions:
By: Date:
By: Date:

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www.stephensengineers.com 60 Northrup Drive, Brentwood, NH 03833 (603) 772-1417

Leaking Underground Storage Tank Project Report

Site Number: 199309039

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON

Mapit

Project Number: 0004478

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown

Assigned To: CLOSED

Eligibile: PERMANENTLY ELIGIBLE

MTBE: Y

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Discovery Date: 09/24/1993

Eligibilty Determined on: 05/15/1997

Brownfield: N

Project Related Documents (11)

	Document Type	Name/Title	Date Submitted	File Size
4405531	PERMIT INFORMATION	GWP-199309039-H-002 NOVEMBER 2003 GROUNDWATER SAMPLING RESULTS 12-DEC-2003	12/18/2003	.39 MB
4405532	PERMIT INFORMATION	GWP-199309039-H-002 NOVEMBER 2002 GROUNDWATER SAMPLING RESULTS 27-NOV-2002	12/05/2002	.28 MB
4405533	PERMIT INFORMATION	GWP-199309039-H-002 NOVEMBER 2001 GROUNDWATER SAMPLING RESULTS 27-MAR-2002	03/29/2002	.28 MB
4405534	PERMIT INFORMATION	GWP-930939-H-001 NOVEMBER 1999 GROUNDWATER SAMPLING RESULTS 30-DEC-1999	01/07/2000	.26 MB
4405536	PERMIT INFORMATION	GWP-930939-H-001 NOVEMBER 1998 GROUNDWATER SAMPLING RESULTS 30-NOV-1998	12/02/1998	.26 MB
4405537	PERMIT INFORMATION	GWP-930939-H-001 NOVEMBER 1997 GROUNDWATER SAMPLING RESULTS 30-DEC-1997	01/05/1998	.29 MB
4405538	PERMIT INFORMATION	GWP-930939-H-001 NOTIFICATION OF RECORDATION 25-JUL-1996	07/26/1996	.03 MB
4405539	PERMIT INFORMATION	GWP-930939-H-001 NOTIFICATION OF RECORDATION 25-JUN-1996	06/27/1996	.03 MB
4405540	REPORT TO DES	CONTAMINATED SOIL DISPOSAL RECORDS 25-AUG-1995	08/28/1995	.29 MB
4405541	REPORT TO DES	ENVIRONMENTAL SITE INVESTIGATION REPORT REVISED 10-MAY-1994	05/11/1994	1.85 MB
4405542	CORRESPONDENCE	CORRESPONDENCE 10/13/1993 TO 09/12/2001	10/13/1993	.52 MB

Site Number: 199309039
Project Number: 0004478

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON
Mapit

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown
Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED
Discovery Date: 09/24/1993

Eligibile: PERMANENTLY ELIGIBLE
Eligibilty Determined on: 05/15/1997

MTBE: Y
Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
02/24/2009	Additional Information Received	MARTS	04/07/2009	Regulatory Action Compl.-DES File Closed	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4162671	PERMIT INFORMATION	GWP-199309039-H-003 DISCHARGE AND RELEASE OF NOTICE OF GMP 17-SEP-2008	02/24/2009	.59 MB

01/08/2009	Fund Reimbursement Request Received	MARTS	02/26/2009	Fund Reimbursement Request Approved	

Activity Documents (2)

	Document Type	Document Title	Document Date	File Size
4162804	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 26	02/26/2009	.02 MB
4220176	REIMBURSEMENT	REQ. NO. 26 7-JAN-09	01/08/2009	.23 MB

07/01/2008	Fund Reimbursement Request Received	MARTS	10/09/2008	Fund Reimbursement Request Approved	

Activity Documents (2)

	Document Type	Document Title	Document Date	File Size
4141559	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 25	10/09/2008	.02 MB
4221302	REIMBURSEMENT	REQ. NO. 25 24-JUN-08	07/01/2008	.25 MB

Site Number: 199309039
Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON
Mapit

Project Number: 0004478
Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown
Assigned To: CLOSED
Eligibile: PERMANENTLY ELIGIBLE
MTBE: Y

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE
Discovery Date: 09/24/1993
Eligibilty Determined on: 05/15/1997
Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/20/2008	Non-Permit GW Monitoring Result Received	MARTS	08/01/2008	Additional Information Requested	

Activity Documents (3)

	Document Type	Document Title	Document Date	File Size
4122553	CORRESPONDENCE-FROM	E-MAIL REQUESTING SUBMISSION OF THE RELEASE OF RECORDATION	08/12/2008	.03 MB
4120241	CORRESPONDENCE-FROM	CERTIFICATE OF NO FURTHER ACTION IN RESPONSE TO APRIL 2008 GROUNDWATER QUALITY MONITORING RESULTS PREPARED BY GZA GEOENVIRONMENTAL INC DATED MAY 19 2008	08/01/2008	.04 MB
4087885	MONITORING NONPERMIT	APRIL 2008 GROUNDWATER QUALITY MONITORING RESULTS 19-MAY-2008	05/20/2008	.85 MB

02/06/2008	Fund Reimbursement Request Received	MARTS	06/23/2008	Fund Reimbursement Request Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4101983	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 24	06/23/2008	.02 MB

02/01/2008	Annual Report Received	MARTS	03/31/2008	Additional Information Requested	

Activity Documents (2)

	Document Type	Document Title	Document Date	File Size
4067715	CORRESPONDENCE	E-MAIL RESPONSE TO 2007 GROUNDWATER MONITORING ANNUAL SUMMARY REPORT; REQUESTING AN ADDITIONAL MONITORING EVENG DURING APRIL 2008 FOR VOCS AND EDB	03/31/2008	.08 MB
4060778	PERMIT INFORMATION	GWP-199309039-H-003 2007 GROUNDWATER MONITORING ANNUAL SUMMARY REPORT 25-JAN-2008	02/01/2008	3.60 MB

Site Number: 199309039
Project Number: 0004478

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON
Mapit

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown
Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED
Discovery Date: 09/24/1993

Eligibile: PERMANENTLY ELIGIBLE
Eligibilty Determined on: 05/15/1997

MTBE: Y
Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
01/30/2007	Fund Reimbursement Request Received	MARTS	04/27/2007	Fund Reimbursement Request Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4022401	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 23	04/27/2007	.02 MB

01/30/2007	Annual Report Received	MARTS	04/02/2007	Additional Information Requested	

Activity Documents (3)

	Document Type	Document Title	Document Date	File Size
4019788	CORRESPONDENCE	EMAIL FROM KAREN LEAVITT PROVIDING MISSING TEXT FROM ANNUAL SUMMARY REPORT	04/02/2007	.00 MB
4018642	CORRESPONDENCE-FROM	E-MAIL REQUESTING MISSING TEXT AND UPDATING TABLES IN FUTURE REPORTS	04/02/2007	.01 MB
4013501	PERMIT INFORMATION	GWP-199309039-H-003 2006 GROUNDWATER MONITORING ANNUAL SUMMARY REPORT 26-JAN-2007	01/30/2007	2.98 MB

04/03/2006	Fund Reimbursement Request Received	BLEDSOE	04/30/2006	Fund Reimbursement Request Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
3968249	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 22	05/01/2006	.02 MB

Site Number: 199309039
Project Number: 0004478
Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON
Mapit
Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842
Wellhead Protection Area: Unknown
Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE
Assigned To: CLOSED
Discovery Date: 09/24/1993
Eligibile: PERMANENTLY ELIGIBLE
Eligibilty Determined on: 05/15/1997
MTBE: Y
Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
03/29/2006	Groundwater Permit Application Received	MARTS	05/16/2006	Groundwater Permit Issued	

Activity Documents (2)

	Document Type	Document Title	Document Date	File Size
3969716	PERMIT INFORMATION	GWP-199309039-H-003 GROUNDWATER MANAGEMENT PERMIT	05/16/2006	.12 MB
3962366	PERMIT INFORMATION	GWP-199309039-H-003 GROUNDWATER MANAGMENT PERMIT RENEWAL APPLICATION	03/29/2006	10.01 MB

03/29/2006	Fund Reimbursement Request Received	MARTS	05/12/2006	Fund Reimbursement Request Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
3969468	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 21	05/12/2006	.02 MB

03/21/2006	Fund Reimbursement Request Received	MARTS	05/12/2006	Fund Reimbursement Request Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
3969466	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 20	05/12/2006	.03 MB

03/13/2006	Additional Information Received	MARTS	05/16/2006	Additional Information Requested	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size

Site Number: 199309039
Project Number: 0004478

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON
Mapit

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown
Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED
Discovery Date: 09/24/1993

Eligibile: PERMANENTLY ELIGIBLE
Eligibilty Determined on: 05/15/1997

MTBE: Y
Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
03/13/2006	Additional Information Received	MARTS	05/16/2006	Additional Information Requested	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
3959555	REPORT	REMEDIAL IMPLEMENTATION REPORT	03/13/2006	14.59 MB

03/13/2006	Fund Reimbursement Request Received	MARTS	04/26/2006	Fund Reimbursement Request Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
3967829	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 19	04/26/2006	.03 MB

12/16/2005	Permit Related GW Data Submittal	MARTS	02/22/2006	Additional Information Requested	

Activity Documents (2)

	Document Type	Document Title	Document Date	File Size
3959445	CORRESPONDENCE	RESPONSE TO GROUNDWATER SAMPLING RESULTS-NOVEMBER 2005 PREPARED BY GEMINI GEOTECHNICAL ASSOCIATES INC DATED DECEMBER 14 2005	02/22/2006	.11 MB
3947236	PERMIT INFORMATION	GWP-199309039-H-002 NOVEMBER 2005 GROUNDWATER MONITORING RESULTS 14-DEC-2005	12/16/2005	.60 MB

Site Number: 199309039
Project Number: 0004478

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON
Mapit

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown
Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED
Discovery Date: 09/24/1993

Eligibile: PERMANENTLY ELIGIBLE
Eligibilty Determined on: 05/15/1997

MTBE: Y
Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/16/2005	Fund Reimbursement Request Received	MARTS	02/09/2006	Fund Reimbursement Request Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
3954543	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 18	02/09/2006	.02 MB

09/30/2005	Change Order	MARTS	09/30/2005	Change Order Approved	

Activity Documents (3)

	Document Type	Document Title	Document Date	File Size
3945612	WORKSCOPE/BUDGET	WORKSCOPE FOR REPAVING	11/21/2005	.11 MB
3939620	WORKSCOPE/BUDGET	WORKSCOPE CHANGE ORDER AUTHORIZATION	10/05/2005	.10 MB
3939390	CORRESPONDENCE	EXPLANATION OF REPAVING COSTS AND ENPROS PROJECT COST	09/30/2005	.00 MB

08/08/2005	Work Scope Submitted	MARTS	08/18/2005	Work Scope Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
3933045	WORKSCOPE/BUDGET	WORKSCOPE	08/08/2005	.41 MB

04/22/2005	Additional Information Received	MARTS	06/28/2005	No Action Necessary (Report filed)	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size

Site Number: 199309039

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON

Mapit

Project Number: 0004478

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown

Assigned To: CLOSED

Eligibile: PERMANENTLY ELIGIBLE

MTBE: Y

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Discovery Date: 09/24/1993

Eligibilty Determined on: 05/15/1997

Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/22/2005	Additional Information Received	MARTS	06/28/2005	No Action Necessary (Report filed)	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
3903136	REPORT	NOTICE OF MORTGAGE FORECLOSURE SALE BY ABLITT & CARUOLO 13-APR-05	04/22/2005	.33 MB

04/01/2005	Fund Reimbursement Request Received	MARTS	07/08/2005	Fund Reimbursement Request Approved	

Activity Documents (1)

Document Type		Document Title	Document Date	File Size
3914370	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 17	07/11/2005	.02 MB

04/01/2005	Permit Related GW Data Submittal	MARTS	06/05/2005	Additional Information Requested	

Activity Documents (2)

Document Type		Document Title	Document Date	File Size
3913690	CORRESPONDENCE	FRANK FITZGERALD: REQUEST FOR WORKSCOPE AND BUDGET FOR SOIL REMOVAL BY JMARTS	07/05/2005	.01 MB
3900670	PERMIT INFORMATION	GWP-199309039-H-002 NOVEMBER 2004 GROUNDWATER SAMPLING RESULTS BY GEMINI 25-MAR-2005	04/01/2005	.84 MB

12/19/2003	Fund Reimbursement Request Received	MARTS	01/30/2004	Fund Reimbursement Request Approved	
12/02/2002	Fund Reimbursement Request Received	PESHKA	01/14/2003	Fund Reimbursement Request Approved	
04/01/2002	Fund Reimbursement Request Received	HOPKINS	07/10/2002	Fund Reimbursement Request Approved	
08/17/2001	Fund Reimbursement Request Received	LEDGARD	10/26/2001	Fund Reimbursement Request Approved	

Site Number: 199309039
Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON
Mapit

Project Number: 0004478
Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown
Assigned To: CLOSED
Eligibile: PERMANENTLY ELIGIBLE
MTBE: Y

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE
Discovery Date: 09/24/1993
Eligibilty Determined on: 05/15/1997
Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
08/17/2001	Fund Reimbursement Request Received	LEDGARD	10/26/2001	Fund Reimbursement Request Approved	
08/17/2001	Additional Information Received	LEDGARD	09/12/2001	Technical Report Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4405514	PERMIT INFORMATION	GWP-199309039-H-002 REPORT DETAILING ORC APPLICATION AND JUNE & JULY 2001 SAMPLING RESULTS 10-AUG-2001	08/17/2001	.52 MB

08/10/2001	Fund Reimbursement Request Received	HOPKINS	10/26/2001	Fund Reimbursement Request Approved	
05/07/2001	Fund Reimbursement Request Received	HOPKINS	07/11/2001	Fund Reimbursement Request Approved	
02/20/2001	Fund Reimbursement Request Received	KARNAUKH-L	04/16/2001	Fund Reimbursement Request Approved	
02/16/2001	Work Scope - Short Form	MONGEON	02/16/2001	Work Scope - Short Form Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4405520	WORKSCOPE/BUDGET	APPROVED WORKSCOPE AUTHORIZATION FOR ORC APPLICATION + REPORTING	02/16/2001	.42 MB

02/13/2001	Groundwater Permit Application Received	KARNAUKH-L	04/30/2001	Groundwater Permit Issued	

Activity Documents (2)

	Document Type	Document Title	Document Date	File Size
4163697	PERMIT INFORMATION	GWP-199309039-H-002 GROUNDWATER MANAGEMENT PERMIT	04/30/2001	.22 MB
4405515	PERMIT INFORMATION	APPLICATION FOR RENEWAL OF GROUNDWATER MANAGEMENT PERMIT 12-FEB -2001	02/13/2001	.50 MB

Site Number: 199309039
Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON
Mapit

Project Number: 0004478
Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown
Assigned To: CLOSED
Eligibile: PERMANENTLY ELIGIBLE
MTBE: Y

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE
Discovery Date: 09/24/1993
Eligibilty Determined on: 05/15/1997
Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/11/2000	Fund Reimbursement Request Received	LEDGARD	02/23/2001	Fund Reimbursement Request Approved	
12/11/2000	Additional Information Received	LEDGARD	02/05/2001	Technical Report Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4405518	PERMIT INFORMATION	GWP-930939-H-001 NOVEMBER 2000 GROUNDWATER MONITORING RESULTS 06 -DEC-2000	12/11/2000	.36 MB

01/24/2000	Fund Reimbursement Request Received	LEDGARD	04/14/2000	Fund Reimbursement Request Approved	
12/16/1998	Fund Reimbursement Request Received	MONGEON	02/25/1999	Fund Reimbursement Request Approved	
01/15/1998	Fund Reimbursement Request Received	REICHARD	03/18/1998	Fund Reimbursement Request Approved	
02/03/1997	Fund Reimbursement Request Received	REICHARD	03/19/1997	Fund Reimbursement Request Approved	
06/10/1996	Additional Information Received	REICHARD	06/12/1996	Groundwater Permit Modified	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4405521	PERMIT INFORMATION	GWP-930939-H-001 GROUNDWATER MANAGEMENT PERMIT ISSUED	06/12/1996	.05 MB

04/19/1996	Fund Reimbursement Request Received	DENISON	06/19/1996	Fund Reimbursement Request Approved	
04/16/1996	Work Scope Submitted	REICHARD	05/22/1996	Work Scope Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4405522	WORKSCOPE/BUDGET	WORKSCOPE APPROVAL FOR GROUNDWATER SAMPLING & ANALYSIS + REPORTING 09-APR-1996	04/16/1996	.24 MB

Site Number: 199309039
Project Number: 0004478

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON
Mapit

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown
Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED
Discovery Date: 09/24/1993

Eligibile: PERMANENTLY ELIGIBLE
Eligibilty Determined on: 05/15/1997

MTBE: Y
Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/16/1996	Groundwater Permit Application Received	REICHARD	05/22/1996	Groundwater Permit Issued	

Activity Documents (2)

	Document Type	Document Title	Document Date	File Size
4163812	PERMIT INFORMATION	GWP-930939-H-001 GROUNDWATER MANGEMENT PERMIT	05/22/1996	.25 MB
4276619	CORRESPONDENCE	GWP-930939-H-001 PERMIT SUMMARY MEMO	05/22/1996	.23 MB

03/11/1996	Fund Reimbursement Request Received	DENISON	04/12/1996	Fund Reimbursement Request Approved	
03/08/1996	Groundwater Permit Application Received	KARNAUKH-L	04/02/1996	Additional Information Requested	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4405523	PERMIT INFORMATION	GWP-930939-H-001 SECOND SUPPLEMENTAL ENVIRONMENTAL SITE INVESTIGATION & REMEDIAL ACTION PLAN 31-JAN-1996	03/08/1996	1.24 MB

09/06/1995	Work Scope Submitted	ESTABROOK	10/23/1995	Work Scope Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4405525	WORKSCOPE/BUDGET	REVISED WORK SCOPE FOR GOUNDWATER MANAGEMENT PERMIT AND REMEDIAL ACTION PLAN 26-OCT-1995	10/30/1995	.31 MB

07/24/1995	Fund Reimbursement Request Received	REICHARD	09/20/1995	Fund Reimbursement Request Approved	

Site Number: 199309039
Project Number: 0004478

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON
Mapit

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown
Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED
Discovery Date: 09/24/1993

Eligibile: PERMANENTLY ELIGIBLE
Eligibilty Determined on: 05/15/1997

MTBE: Y
Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
07/10/1995	Additional Information Received	REICHARD	08/17/1995	Remedial Action Plan Requested	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4405519	REPORT TO DES	SUPPLEMENTAL ENVIRONMENTAL SITE INVESTIGATION REPORT 30-JUN-1995	07/10/1995	1.36 MB

01/30/1995	Work Scope Submitted	KARNAUKH-L	03/28/1995	Work Scope Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4405526	WORKSCOPE/BUDGET	WORK SCOPE APPROVAL FOR SUPPLEMENTAL SITE INVESTIGATION ACTIVITIES	01/30/1995	.17 MB

06/29/1994	Fund Reimbursement Request Received	ESTABROOK	09/12/1994	Fund Reimbursement Request Approved	
05/06/1994	Site Investigation Report Received	ESTABROOK	11/17/1994	Additional Information Requested	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4405527	REPORT TO DES	ENVIRONMENTAL SITE INVESTIGATION REPORT 02-MAY-1994	05/06/1994	1.70 MB

02/01/1994	Work Scope Submitted	ESTABROOK	03/11/1994	Work Scope Approved	

Activity Documents (1)

	Document Type	Document Title	Document Date	File Size
4405529	WORKSCOPE/BUDGET	REVISED WORK SCOPE FOR INITIAL SITE CHARACTERIZATION REPORT	03/21/1994	.48 MB

Site Number: 199309039

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON

Mapit

Project Number: 0004478

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown

Assigned To: CLOSED

Eligibile: PERMANENTLY ELIGIBLE

MTBE: Y

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Discovery Date: 09/24/1993

Eligibilty Determined on: 05/15/1997

Brownfield: N

Activities (52)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
09/24/1993	Discharge of a Regulated Substance	EVANS	09/28/1993	Site Investigation Report Requested	

Permits (21)

Permit Number	Permit Type	Application Date	Issue Date	Expiration Date	Revision Date(s)	Permitee
GWP-199309039-H-003	MANAGEMENT	03/22/2006	05/16/2006	05/15/2011		FRANK FITZGERALD 3 BARBOUR ROAD HAMPTON NH 03842

Permit Submittals

Due Date	Received Date	Sampling Date	Sample Description	Comments
01/31/2010		11/01/2006	ANNUAL SUMMARY REPORT	
01/31/2011		11/01/2006	ANNUAL SUMMARY REPORT	
02/15/2011			PERMIT RENEWAL DUE	
01/31/2009		11/01/2006	ANNUAL SUMMARY REPORT	
01/31/2008	02/01/2008	11/01/2006	2007 ANNUAL SUMMARY REPORT	
01/31/2007	01/30/2007	11/01/2006	2006 ANNUAL SUMMARY REPORT	
11/01/2008			RECORDED RELEASE	

Site Number: 199309039

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON

Mapit

Project Number: 0004478

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown

Assigned To: CLOSED

Eligibile: PERMANENTLY ELIGIBLE

MTBE: Y

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Discovery Date: 09/24/1993

Eligibilty Determined on: 05/15/1997

Brownfield: N

Permits (21)

Permit Number	Permit Type	Application Date	Issue Date	Expiration Date	Revision Date(s)	Permitee
GWP-199309039-H-002	EXPIRED	02/06/2001	04/30/2001	04/29/2006		FRANK FITZGERALD 3 BARBOUR ROAD HAMPTON NH 03801

Permit Submittals

Due Date	Received Date	Sampling Date	Sample Description	Comments
01/15/2002	03/29/2002		ONLY EXCEEDANCE IS BENZENE=6 IN MW-1	
08/15/2001	08/17/2001		BENZ 6; ALKBENZ 79; NAPHTH 41	
09/15/2001	03/29/2002		ONLY EXCEEDANCE IS BENZENE=6 & NAPH=41 IN MW -1	
01/15/2004	12/18/2003		GW MONITORING RESULTS FOR NOVEMBER 2003	
01/15/2003	12/02/2002		NOV 02 RESULTS PER GMP; MW-1 <AGQS	
01/15/2006	12/16/2005		GW MONITORING RESULTS FOR NOVEMBER 2005	
01/15/2005	04/01/2005		GW MONITORING RESULTS FOR NOVEMBER 2004	

GWP-930939-H-001	EXPIRED	02/22/1996	05/22/1996	05/21/2001	1) 06/12/1996	MR. FRANK FITZGERALD 17 BARBOUR ROAD HAMPTON, NH 03842 HAMPTON NH 03842

Permit Submittals

Due Date	Received Date	Sampling Date	Sample Description	Comments
08/26/1996	07/26/1996		GMZ recordation received	
01/30/2000	01/07/2000			
01/30/1999	12/02/1998		MW1 BENZ=45 PPB & NAPHTH=108PPB	
			*MW1,5,7:November:VOC,MTBE,napth EPA8020	

Site Number: 199309039

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON

Mapit

Project Number: 0004478

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown

Assigned To: CLOSED

Eligibile: PERMANENTLY ELIGIBLE

MTBE: Y

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Discovery Date: 09/24/1993

Eligibilty Determined on: 05/15/1997

Brownfield: N

Permits (21)

Permit Number	Permit Type	Application Date	Issue Date	Expiration Date	Revision Date(s)	Permitee
GWP-930939-H-001	EXPIRED	02/22/1996	05/22/1996	05/21/2001	1) 06/12/1996	MR. FRANK FITZGERALD 17 BARBOUR ROAD HAMPTON, NH 03842 HAMPTON NH 03842

Permit Submittals

Due Date	Received Date	Sampling Date	Sample Description	Comments
01/30/1997	01/27/1997		Benz=7 ppb MW-1 & = 5.6ppb MW-5	
01/30/1998	01/05/1998		MW1 BEN=17 & NAPH=26;MW5 BENZ=6.4 PPB	

Site Number:	199309039	Project Number:	0004478
Name and Address:	FRANK FITZGERALD INC 17 BARBOUR RD HAMPTON	Responsible Party:	FRANK FITZGERALD INC HAMPTON NH 03842
Mapit			
Wellhead Protection Area:	Unknown	Risk Level:	NO SOURCES/NO AGQS VIO'S FROM ONSITE
Assigned To:	CLOSED	Discovery Date:	09/24/1993
Eligibile:	PERMANENTLY ELIGIBLE	Eligibilty Determined on:	05/15/1997
MTBE:	Y	Brownfield:	N

No Vapor Recovery Information

Underground Injection Control Project Report

Site Number: 199309039

Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON

Mapit

Project Number: 0005915

Responsible Party: FRANK FITZGERALD INC
HAMPTON NH 03842

Wellhead Protection Area: Unknown

Assigned To: CLOSED

Eligibile: UNKNOWN OR NOT YET ACHIEVED

MTBE: N

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Discovery Date: 08/21/1995

Eligibilty Determined on:

Brownfield: N

Activities (2)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
10/05/1995	Additional Information Received	LOCKER	10/06/1995	Regulatory Action Compl.-DES File Closed	

Activity Documents (2)

	Document Type	Document Title	Document Date	File Size
4405512	CORRESPONDENCE-FROM	RESPONSE TO FLOOR DRAIN CLOSURE REPORT	10/11/1995	.02 MB
4405511	CORRESPONDENCE-TO	NOTIFICATION OF FLOOR DRAIN CLOSURE 02-OCT-1995	10/04/1995	.02 MB

08/21/1995	Additional Information Received	LOCKER	08/25/1995	Stop UIC Discharge	

Underground Injection Control Project Report

Site Number:	199309039	Project Number:	0005915
Name and Address:	FRANK FITZGERALD INC 17 BARBOUR RD HAMPTON	Responsible Party:	FRANK FITZGERALD INC HAMPTON NH 03842
Mapit			
Wellhead Protection Area:	Unknown	Risk Level:	NO SOURCES/NO AGQS VIO'S FROM ONSITE
Assigned To:	CLOSED	Discovery Date:	08/21/1995
Eligibile:	UNKNOWN OR NOT YET ACHIEVED	Eligibilty Determined on:	
MTBE:	N	Brownfield:	N

No Vapor Recovery Information

Underground Storage Tank Facility Report

Site Number: 199309039

System Name and Address: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON

Mapit

Registration Date: 03/28/1986

Facility Id: 0110369

Facility Owner: FRANK FITZGERALD INC
17 BARBOUR RD
HAMPTON NH 03842

Facility Type: COMMERCIAL

Tanks (4)

Active: 0 Closed: 4

Tank #	Substance Stored	Capacity	Installed Date	Temporarily Closed Date	Permanently Closed Date	Assessment Received Date	Construction Material	Piping Material	System Type	Overfill Install Date	Spill Install Date
1	DIESEL FUEL	2000	01/01/1986		06/03/1993	07/15/1993	STEEL-CORR. PROT.	STEEL - BARE/GALV			
2	GASOLINE	4000	01/01/1975		08/25/1988		STEEL - BARE/GALV	STEEL - BARE/GALV			
3	GASOLINE	2000	01/01/1963		10/01/1987		STEEL - BARE/GALV	STEEL - BARE/GALV			
4	#2 HEATING OIL	2000	01/01/1968		06/03/1993	07/15/1993	STEEL - BARE/GALV	STEEL - BARE/GALV			

Permits (2)

Type	Renewal Date	Issue Date
UST Permit	12/07/1994	
UST Permit	10/01/1991	

Documents (4)

	Document Type	Name/Title	Date Submitted	File Size
3731156	CORRESPONDENCE	Correspondence 10/6/87 to 11/10/94	09/04/2003	1.10 MB
4405513	REPORT TO DES	CLOSURE REPORT FOR TANKS 1 & 4 07-JUL-1993	07/15/1993	.64 MB
3731158	REPORT	UST Closure Report Review	07/15/1993	.03 MB
3731157	REGISTRATION	Notification For USTs	03/31/1986	.29 MB

Hazardous Waste Generator Report

EPA Id: NHD510084957

Handler Id: 0000700

Current Name and Address: FITZGERALD FRANK
17 BARBER ST
HAMPTON

Mapit

Contact Information: FRANK FITZGERALD
3 BARBOUR RD
HAMPTON NH 03842

603-929-0782

Effective Date: 05/31/2006

Current Status: INACTIVE

Generator Size: NONE

Owner: FITZGERALD FRANK

Notifications / Updates (3)

Notification Date	Effective Date	Name	Generator Status	Generator Size	Generator Type
05/31/2006	05/31/2006	FITZGERALD FRANK	INACTIVE	NONE	
03/17/2006	03/17/2006	FITZGERALD FRANK	INACTIVE	NONE	
03/06/1999	03/06/1999	FITZGERALD FRANK	INACTIVE	SQG(CESQG)	

EPA Id: NHD510084957

Handler Id: 0000700

Current Name and Address: FITZGERALD FRANK
17 BARBER ST
HAMPTON

Mapit

Contact Information: FRANK FITZGERALD
3 BARBOUR RD
HAMPTON NH 03842

603-929-0782

Effective Date: 05/31/2006

Current Status: INACTIVE

Generator Size: NONE

Owner: FITZGERALD FRANK

Documents (17)

	Document Type	Manifest Number	Year	Quarter	Name/Title	File Size
3964964	Discrepancy Letter		2005			.08 MB
3964965	Discrepancy Letter		2005			.43 MB
3964962	Discrepancy Letter		2005			.07 MB
3964963	Discrepancy Letter		2005			.07 MB
3965083	Quarterly Reports		2005	4		.09 MB
3962305	Manifest Copy 7	MEE003783	2005	4		.38 MB
3962991	Manifest Copy 7	MEE003781	2005	4		.35 MB
3962990	Manifest Copy 7	MEE003782	2005	4		.35 MB
3962989	Manifest Copy 7	MEE003783	2005	4		.35 MB
3962937	Manifest Copy 2	MEE003781	2005	4		.34 MB
3962936	Manifest Copy 2	MEE003783	2005	4		.36 MB
3962988	Manifest Copy 7	MEE004231	2005	4		.35 MB
3962935	Manifest Copy 2	MEE003782	2005	4		.34 MB
3958702	Manifest Copy 7	MEE004231	2005	4		.39 MB
3956600	Correspondence Out		2006		HW WITH AN INACTIVE STATUS	.06 MB
3956713	Manifest Copy 2	MEE003783	2005	4		.42 MB
3954466	Correspondence Out		2006		HW WITH AN INACTIVE STATUS	.05 MB

Hazardous Waste Generator Report

EPA Id: NHD510084957

Handler Id: 0000700

Current Name and Address: FITZGERALD FRANK
17 BARBER ST
HAMPTON

Mapit

Contact Information: FRANK FITZGERALD
3 BARBOUR RD
HAMPTON NH 03842

603-929-0782

Effective Date: 05/31/2006

Current Status: INACTIVE

Generator Size: NONE

Owner: FITZGERALD FRANK

Manifests (4)

Ext.	Manifest No.	Manifest Date	Generator Signature Date	First Transporter Id	Transporter Signature Date	Other Transporter Ids	Facilty Id	Facilty Signature Date
03781	MEE003781	03/17/2006	11/04/2005	MAD980670004	11/04/2005		MED019051069	11/04/2005

Waste Streams (1)

DOT Id	Waste Description	Waste Codes	# of Cont.	Cont. Type	Total Qty	Reported Units	Fee Status	Weight In lbs.	Assessed Weight	Discrepency
NA3082	BENZENE	1: D018-Benzene	1	TT	5000	GALLONS	RECYCLING-EXEMPT	41685	0	

Ext.	Manifest No.	Manifest Date	Generator Signature Date	First Transporter Id	Transporter Signature Date	Other Transporter Ids	Facilty Id	Facilty Signature Date
03782	MEE003782	03/17/2006	11/07/2005	MAD980670004	11/07/2005		MED019051069	11/07/2005

Waste Streams (1)

DOT Id	Waste Description	Waste Codes	# of Cont.	Cont. Type	Total Qty	Reported Units	Fee Status	Weight In lbs.	Assessed Weight	Discrepency
NA3082	BENZENE	1: D018-Benzene	1	TT	4000	GALLONS	RECYCLING-EXEMPT	33348	0	

Ext.	Manifest No.	Manifest Date	Generator Signature Date	First Transporter Id	Transporter Signature Date	Other Transporter Ids	Facilty Id	Facilty Signature Date
04231	MEE004231	02/27/2006	11/05/2005	MAD980670004	11/05/2005		MED019061069	11/05/2005

Waste Streams (1)

DOT Id	Waste Description	Waste Codes	# of Cont.	Cont. Type	Total Qty	Reported Units	Fee Status	Weight In lbs.	Assessed Weight	Discrepency
NA3082	BENZENE	1: D018-Benzene	1	TT	6100	GALLONS	RECYCLING-EXEMPT	50855.7	0	

Ext.	Manifest No.	Manifest Date	Generator Signature Date	First Transporter Id	Transporter Signature Date	Other Transporter Ids	Facilty Id	Facilty Signature Date
03783	MEE003783	01/11/2006	11/10/2005	MAD980670004	11/10/2005		MED019051069	11/10/2005

Waste Streams (1)

DOT Id	Waste Description	Waste Codes	# of Cont.	Cont. Type	Total Qty	Reported Units	Fee Status	Weight In lbs.	Assessed Weight	Discrepency
NA3082	BENZENE	1: D019-Carbontetrachloride	1	TT	2500	GALLONS	RECYCLING-EXEMPT	20842.5	0	

Underground Injection Control Project Report

Site Number: 201005089

Name and Address: ALIE RESIDENCE (LOT 95-1)
195 WOODLAND ROAD
WOLFEBORO

Mapit

Project Number: 0024299

Responsible Party: ALIE RESIDENCE
(LOT 95-1)
WOLFEBORO

Wellhead Protection Area: No

Assigned To: REGISTRATION

Eligibile:

MTBE: N

Risk Level: DW SUPPLY WITHIN 1000' OR SITE IN SWPA

Discovery Date: 05/28/2010

Eligibilty Determined on:

Brownfield: N

Activities (1)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/28/2010	Additional Information Received	LOCKER	06/02/2010	UIC Registration Issued	REGISTERED

Underground Injection Control Project Report

Site Number:	201005089	Project Number:	0024299
Name and Address:	ALIE RESIDENCE (LOT 95-1) 195 WOODLAND ROAD WOLFEBORO	Responsible Party:	ALIE RESIDENCE (LOT 95-1) WOLFEBORO
Mapit			
Wellhead Protection Area:	No	Risk Level:	DW SUPPLY WITHIN 1000' OR SITE IN SWPA
Assigned To:	REGISTRATION	Discovery Date:	05/28/2010
Eligibile:		Eligibilty Determined on:	
MTBE:	N	Brownfield:	N

No Vapor Recovery Information

On-premise Use Facility Containing Fuel Oil Project Report

Site Number: 200004035

Name and Address: MARK SICARD
7 LITTLE RIVER ROAD
HAMPTON

Mapit

Project Number: 0009970

Responsible Party: MARK SICARD
HAMPTON NH 03842

PHONE: 603-929-4463

Wellhead Protection Area: No

Assigned To: CLOSED

Eligibile: PERMANENTLY ELIGIBLE

MTBE: N

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Discovery Date: 04/26/2000

Eligibilty Determined on: 02/16/2001

Brownfield: N

Activities (9)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/07/2004	Fund Reimbursement Request Received	KARNAUKH-S	07/19/2004	Fund Reimbursement Request Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3830728 REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 3	07/19/2004	.02 MB

09/23/2003	Fund Reimbursement Request Received	KARNAUKH-S	11/26/2003	Fund Reimbursement Request Approved	
09/23/2003	Site Characterization Report Received	KIRBY	11/25/2003	Regulatory Action Compl.-DES File Closed	
		KIRBY	12/02/2002	Technical Report Approved	
02/16/2001	Fund Reimbursement Request Received	BASTIEN	04/16/2001	Fund Reimbursement Request Approved	
01/30/2001	Additional Information Received	KIRBY	08/07/2001	Site Characterization Report Requested	
11/02/2000	Additional Information Received	EVANS	11/02/2000	Site Characterization Report Requested	
05/15/2000	Additional Information Received	EVANS	05/24/2000	Site Characterization Report Requested	
04/26/2000	Discharge of a Regulated Substance	EVANS	04/26/2000	Additional Information Requested	

On-premise Use Facility Containing Fuel Oil Project Report

Site Number: 200004035

Name and Address: MARK SICARD
7 LITTLE RIVER ROAD
HAMPTON

Mapit

Project Number: 0009970

Responsible Party: MARK SICARD
HAMPTON NH 03842

PHONE: 603-929-4463

Wellhead Protection Area: No

Assigned To: CLOSED

Eligibile: PERMANENTLY ELIGIBLE

MTBE: N

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Discovery Date: 04/26/2000

Eligibilty Determined on: 02/16/2001

Brownfield: N

Incident Details

Incident Date: 04/26/2000

Staff: EVANS

Spill Origin: AST LINELEAK

Notification Date: 04/26/2000

Substance Name: #2 FUEL OIL

Spill Amount: 500 Units: GALLONS

Response Action:
N Alternate Water Supply
N Bottled Water Provided
Y Free Product Removal
N Indoor Air Treatment
N Point of Entry Water Treatment
N Vapor Abatement

Comments:

PV #4440 _____ Scheduled Pay Date:_____

Prepared By:_____ Date:_____

Notice of Reimbursement RSA 146-E

MARK SICARD
Request # 3

Date Received 07-MAY-2004

Amount Requested $1,031.00

Priority 3

Town HAMPTON

Site No. 200004035 OPUF

Account No. 10-44-1418-90-415

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Oil Fund Disbursement Board

Responsible Party:

VC 00REIMB:

RANSOM ENVIRONMENTAL
195 COMMERCE WAY SUITE D
PORTSMOUTH NH 03801-3251

Funding Date	26-APR-2000
Active	No
Other Insurance	No
Compliance Audit	Yes
Compliance Date	16-FEB-2001
Project Manager	CLOSED
Review Date	04-JUN-2004
Reviewed By	KARNAUKH-S

	Totals	
To Date	$12,837.27	$12,837.27
Deductible		($100.00)
Current	$1,031.00	$1,031.00

Pay Amount $1,031.00

Invoice Number	Invoice Date	WSA Date	Phase Class	Contractor Sub Contractor	Description	Deduct Code	Total Invoiced	Total Eligible
23838	29-APR-2004 ☐ Waiver	23-JUN-2003 ☐ Appeal	WDC E	RANSOM ENVIRONMENT	WM DECOM		$250.00	$250.00
23838	29-APR-2004 ☐ Waiver	23-JUN-2003 ☐ Appeal	WDC X	RANSOM ENVIRONMENT GREAT WORKS & TEST B(	DRILLING		$781.00	$781.00

Comments

NONE

To: RANSOM ENVIRONMENTAL
195 COMMERCE WAY SUITE D
PORTSMOUTH NH 03801-3251

Approval Date: 07/19/2004